

SLV-T2000AS/T2000B/T2000MN/ T2000NP/T2000NR/T2000UX/T2000VC

RMT-V194/V194A/V194B/V194C

SERVICE MANUAL

Australian Model

SLV-T2000AS

French Model

SLV-T2000B

E Model

SLV-T2000MN

Spanish Model

SLV-T2000NP

North European Model

SLV-T2000NR

UK Model

SLV-T2000UX

Germany Model

SLV-T2000VC

Hi8

F MECHANISM

VHS
PAL

VHS
PAL SECAM

Hi-Fi

H MECHANISM

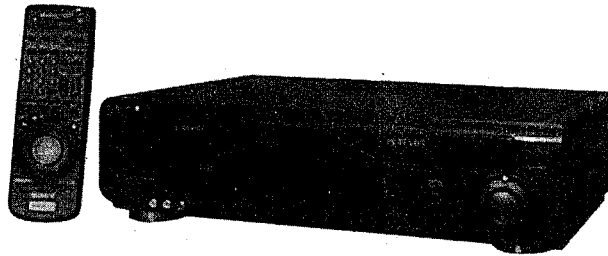


Photo : SLV-T2000VC

For 8mm VIDEO MECHANICAL ADJUSTMENT, Refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL V (F MECHANISM)" (9-973-445-11), and for VHS MECHANICAL ADJUSTMENT, refer to the "VHS MECHANICAL ADJUSTMENT MANUAL IV (H MECHANISM)" (9-973-623-11).

SPECIFICATIONS

System

Channel coverage

PAL

UX: UHF B21 to B69

NP, NR, VC: VHF E2-E12

VHF Italian channel A-H

UHF E21-E69

CATV S1-S20

HYPER S21-S41

CATV S01-S05

B: VHF F2-F15

CATV B-Q

HYPER S21-S41

UHF F21-F69

RF output signal

UHF channels 28 to 55

Aerial out

75-ohm asymmetrical aerial socket

Inputs and outputs

➤ LINE-1 (TV)

21-pin

Video input: pin 20

Audio input: pins 2 and 6

Video output: pin 19

Audio output: pins 1 and 3

➤ LINE-3 IN/DECODER

21-pin

Video input: pin 20

Audio input: pins 2 and 6

LINE-2 IN

S VIDEO, 4-pin mini DIN

Y: 1 Vp-p, 75 ohms, unbalanced, sync negative

C: 0.3 Vp-p, colour burst, 75 ohms, unbalanced

VIDEO IN, phono jack (1)

Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative

AUDIO IN, phone jack (2)

Input level: 327 mVrms

Input impedance: more than 47 kilohms

LINE OUT

S VIDEO, 4-pin mini DIN

Y: 1 Vp-p, 75 ohms, unbalanced, sync negative

C: 0.3 Vp-p, colour burst, 75 ohms, unbalanced

VIDEO OUT, phono jack (1)

Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative

AUDIO OUT, phone jack (2)

Standard output level: 327 mVrms

Load impedance: 47 kilohms

Output impedance: less than 10 kilohms

General

Power requirements

220 - 240 V AC, 50 Hz

Power consumption

37 W

Operating temperature

5°C to 40°C

Storage temperature

-20°C to 60°C

Dimensions

Approx. 430 × 109 × 387 mm (w/h/d)

including projecting parts and controls

Mass

Approx. 7.2 kg

Supplied accessories

Remote commander (1)

R6 (size AA) batteries (2)

Aerial cable (1)

Audio/video cable (1)

S-video cable (1)

Mains lead (1)

LINE IN jack cover (1)(NP,NR,UX,VC)

Design and specifications are subject to change without notice.

VIDEO CASSETTE RECORDER

SONY®



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK Δ OR DOTTED LINE WITH MARK Δ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering

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SLV-T2000AS/T2000B/T2000MN/T2000NP/T2000NR/T2000UX/T2000VC
SERVICE NOTE

1. CLEANING OF VIDEO HEAD AND RUN SYSTEM

1-1. Method 1

[Cleaning Method with Cleaning Tape]

- A cleaning cassette should be used.
Video 8 : V8-25CLH
VHS : T-25CL
(When using, the attached manual for the cleaning cassette should be thoroughly read.)

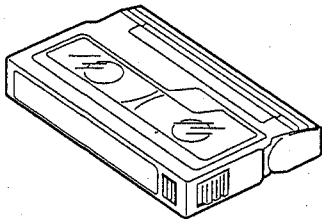


Fig. 1

1-2. Method 2

[Cleaning Method with Cleaning Liquid]

- ① Remove the upper case of the video deck.
- ② Apply cleaning liquid to a head cleaner stick.
- ③ As shown in the figure, press the head cleaner stick lightly. Turn the rubber of the rotary upper drum gradually and clean the video deck.

[Cleaning Method with Run System]

- ① Apply cleaning liquid to a head cleaner stick.
- ② Clean the guides which tape touches directly and the pinch roller with the head cleaner.

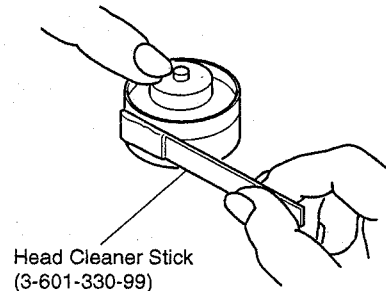


Fig. 2

2. Video 8 DECK SECTION

2-1. Removal of Cassette at Failure with Cassette Inserted

- 1) If tape is wounded on the drum and it cannot be removed:
Rotate the capstan motor wheel in either direction and rotate the S or R reel to house the tape. Then, perform Procedure ②.
- 2) If tape is housed in the cassette half and cannot be removed:
 - ① Remove the MD block. (For removal, refer to Section 2-7.)
 - ② Rotate the drive arms at both sides of L frame and cassette compartment in the arrow direction ①.
 - ③ Rotate the connecting gear in the arrow direction ② with both the thumbs.

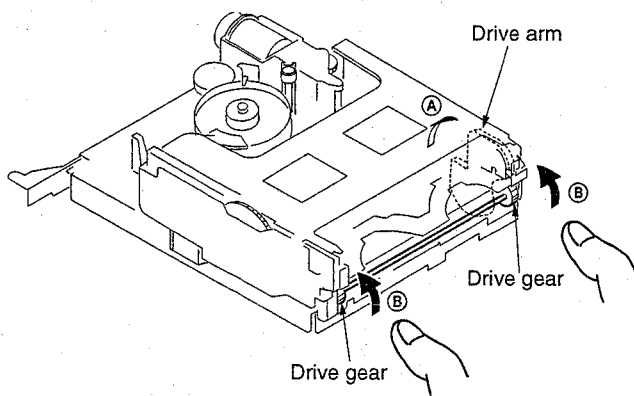


Fig. 3

3. VHS DECK SECTION

3-1. How to Return the Pinch Roller, Guide Roller and Elevator Cam to Stop Mode

- 1) Remove the VHS MD assembly from the machine. (Refer to the item 2-9. Removal.)
- 2) Rotate the worm gear-1 of the cam motor beneath the MD assembly in the direction arrow (A) using a screw driver tip.

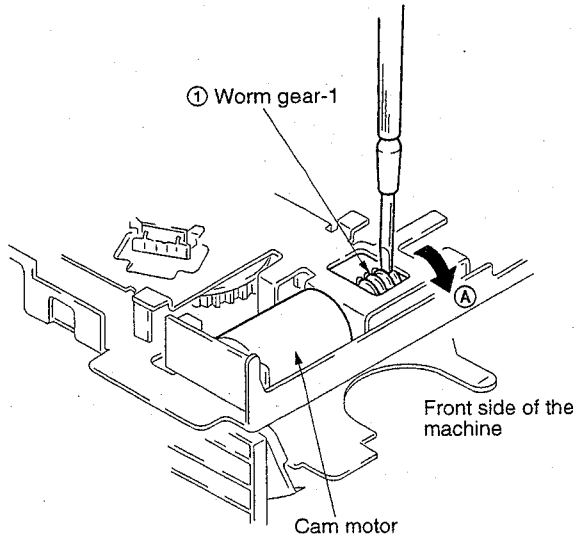


Fig. 4

3-2. How to Return a Tape Into Cassette Half

A tape can be rewind into a cassette half by rotating the flywheel-1 of the capstan motor in the direction of (A) with hand.

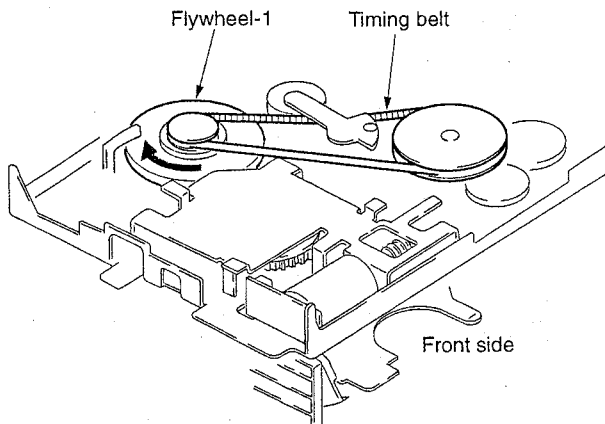


Fig. 5

3-3. How to Remove a Cassette From a Machine If a Cassette Is Left In a Machine In Trouble

Execute the item 3-2, and keep rotating the flywheel-1.

When executing section 3-1 to 3-3, take care that a tape slack should not be caught by a mechanism or a tape should not be damaged.

3-4. How to Remove Drum Assembly

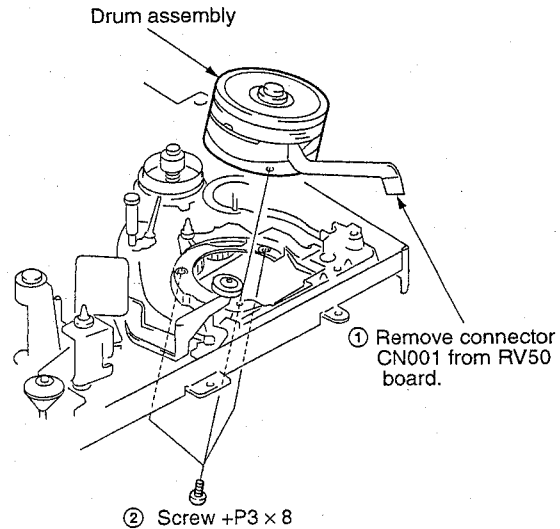


Fig. 6

3-5. How to Replace a Rotary Upper Drum

3-5-1. How to Remove a Rotary Upper Drum

- 1) Remove screw ① (+P3×8) and remove the ground shaft assembly ②. (Refer to Fig. 7)
- 2) Remove soldering which is marked by arrow and remove the rotary upper drum board completely.
- 3) Remove two screws ③ (PSW3×8) and remove the rotary upper drum in the direction of ④. (Refer to Fig. 8)

If removal is difficult, remove it while rotating it slowly.

Note: If removal is difficult, check again if soldering is removed completely.

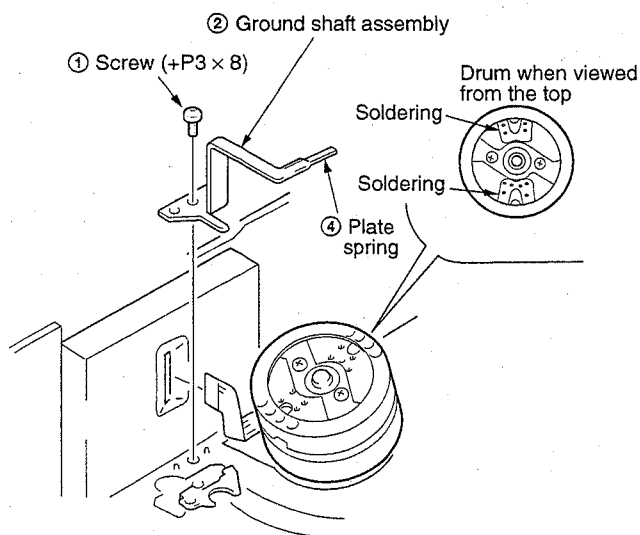


Fig. 7

3-5-2. How to Attach a New Rotary Upper Drum

- 1) Pay attention so that finger print or like must not be put when inserting a new upper drum into lower drum.
- 2) Align ➡ mark of the rotary upper drum board with the ➡➡ mark of the rotary transformer board so that the screw hole on the upper drum and that on the lower drum are aligned. (Refer to Fig. 8)
- 3) If attaching is difficult, attach a upper drum while rotating it slowly.

Note: Pay attention not to damage the video heads.
Confirm that the upper drum is inserted completely.

- 4) Tighten the two screws ③ (PSW3×8). (Refer to Fig. 8)
- 5) Fix the earth shaft ② by tightening the screw ① (+P3×8) so that protrusion at the tip of the earth shaft contacts the center of the drum shaft.

Note: When attaching the ground shaft assembly ②, never give force to the plate spring ④.

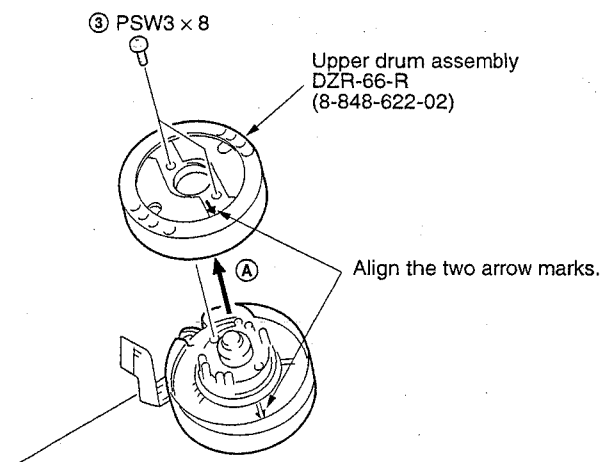
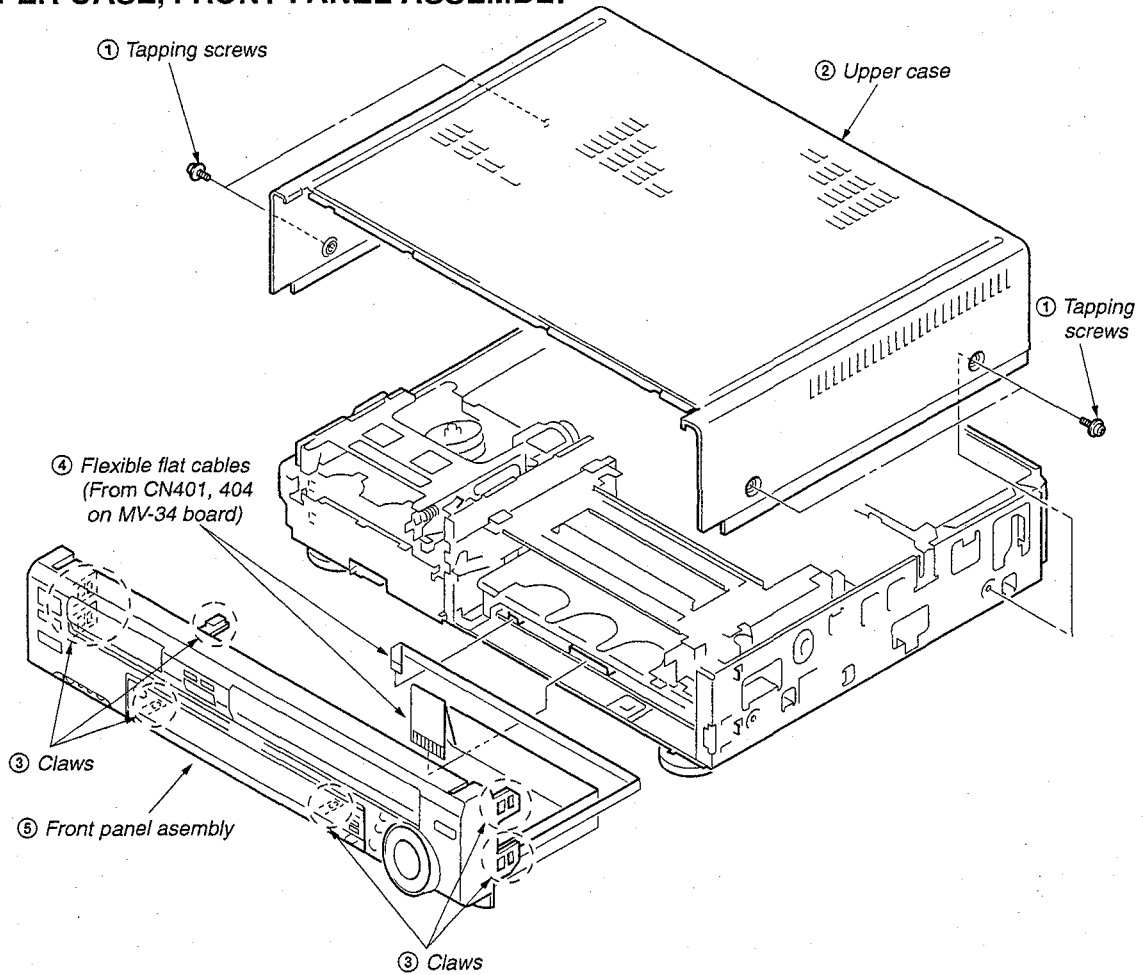


Fig. 8

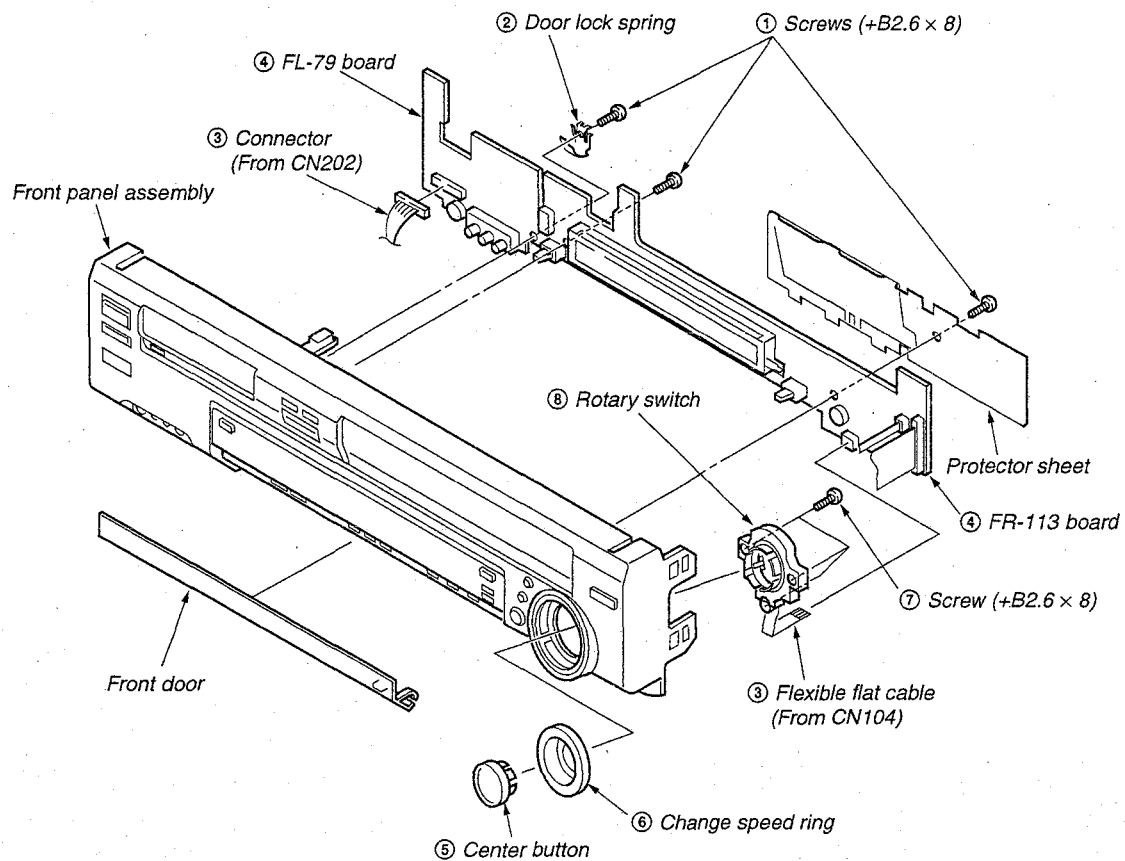
SECTION 2 DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

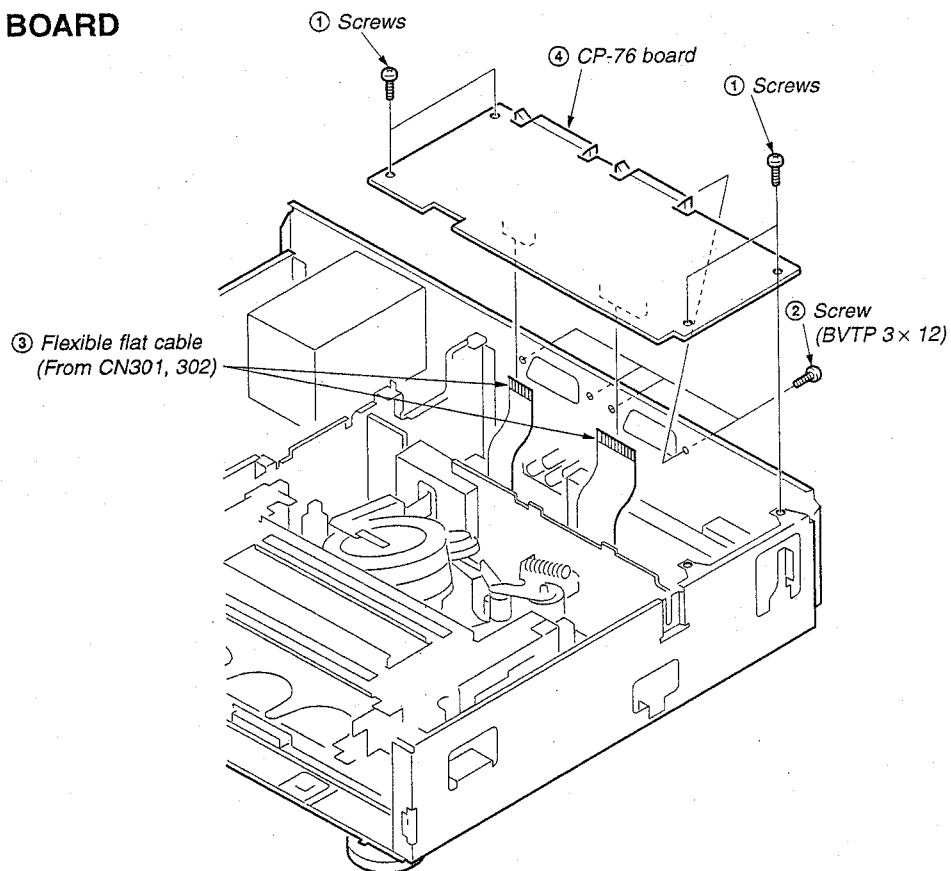
2-1. UPPER CASE, FRONT PANEL ASSEMBLY



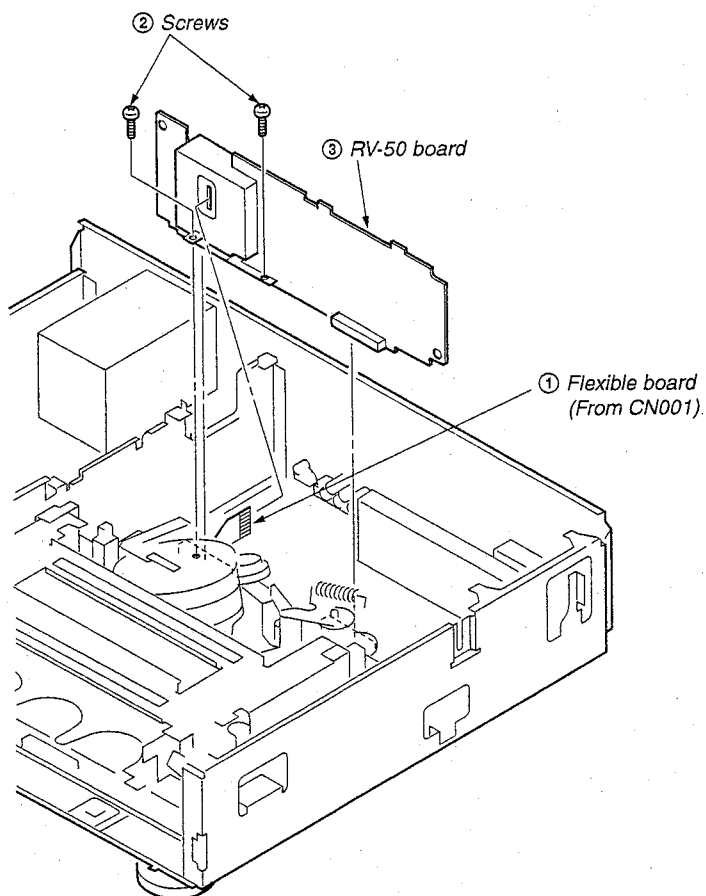
2-2. FL-79, FR-113 BOARDS, ROTARY SWITCH



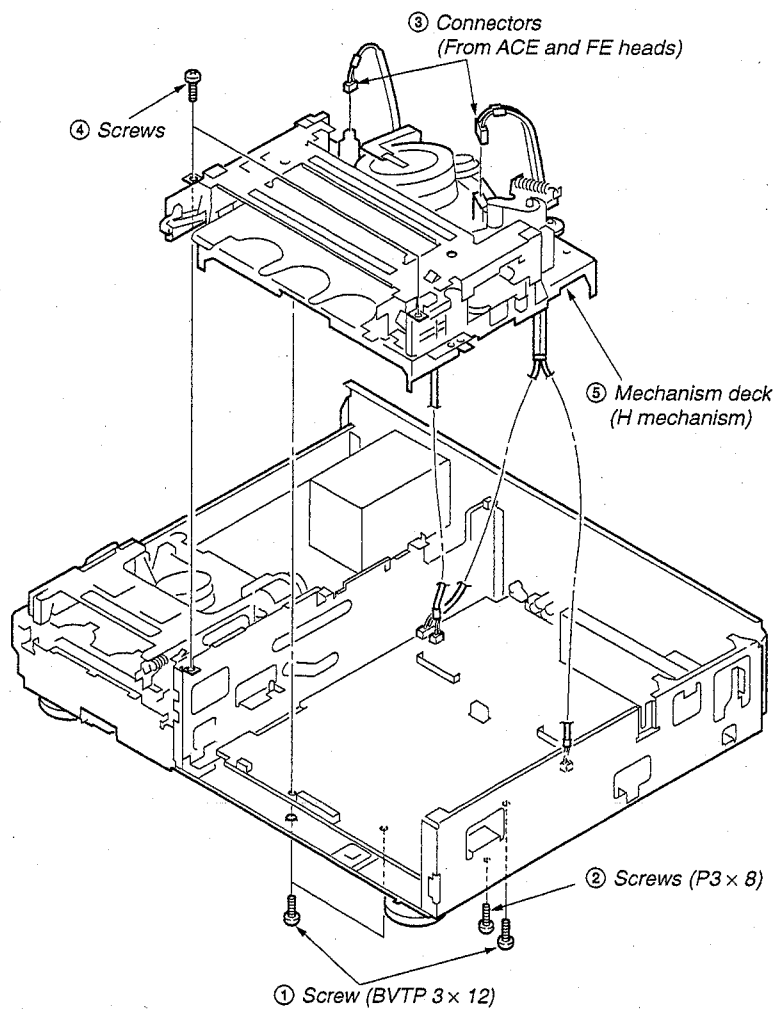
2-3. CP-76 BOARD



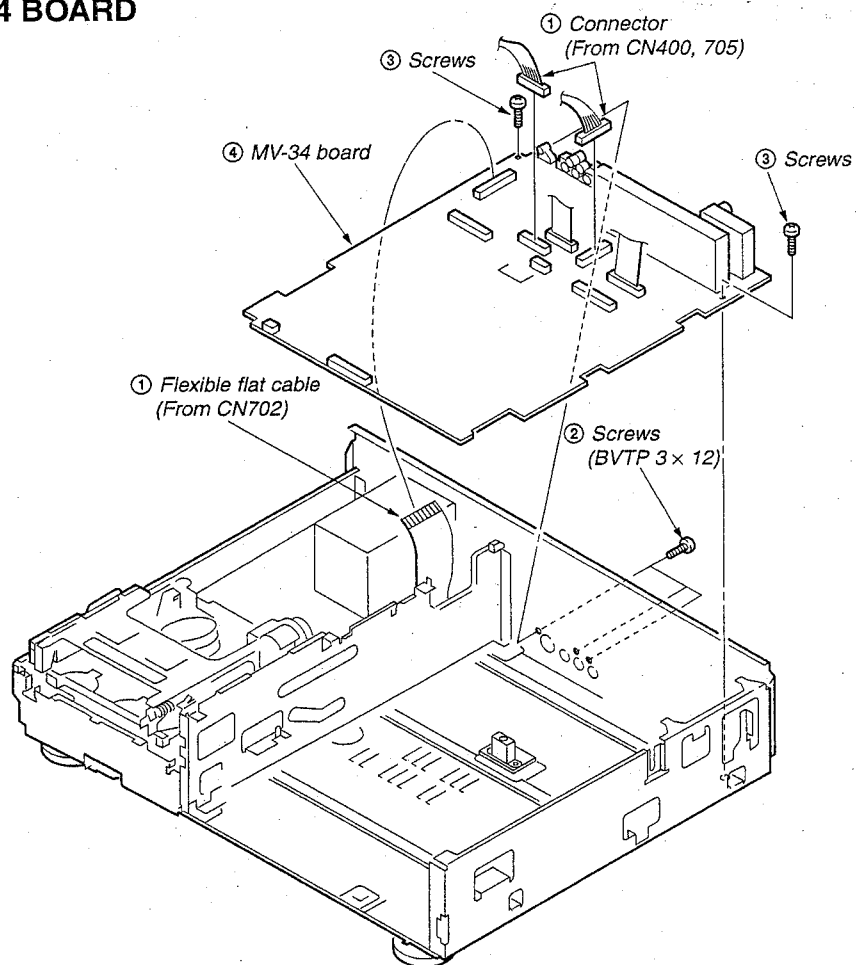
2-4. RV-50 BOARD



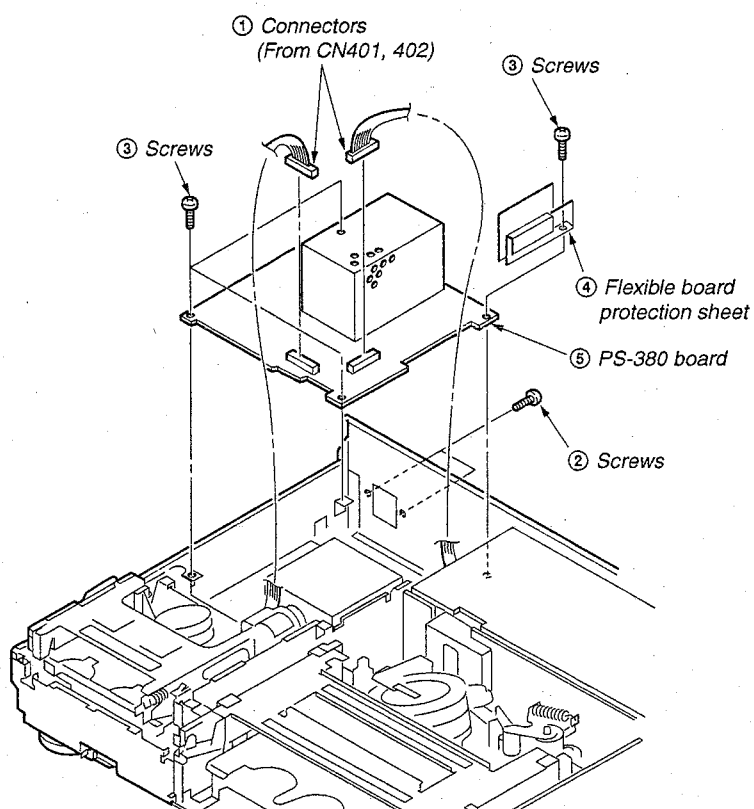
2-5. VHS MECHANISM DECK ASSEMBLY



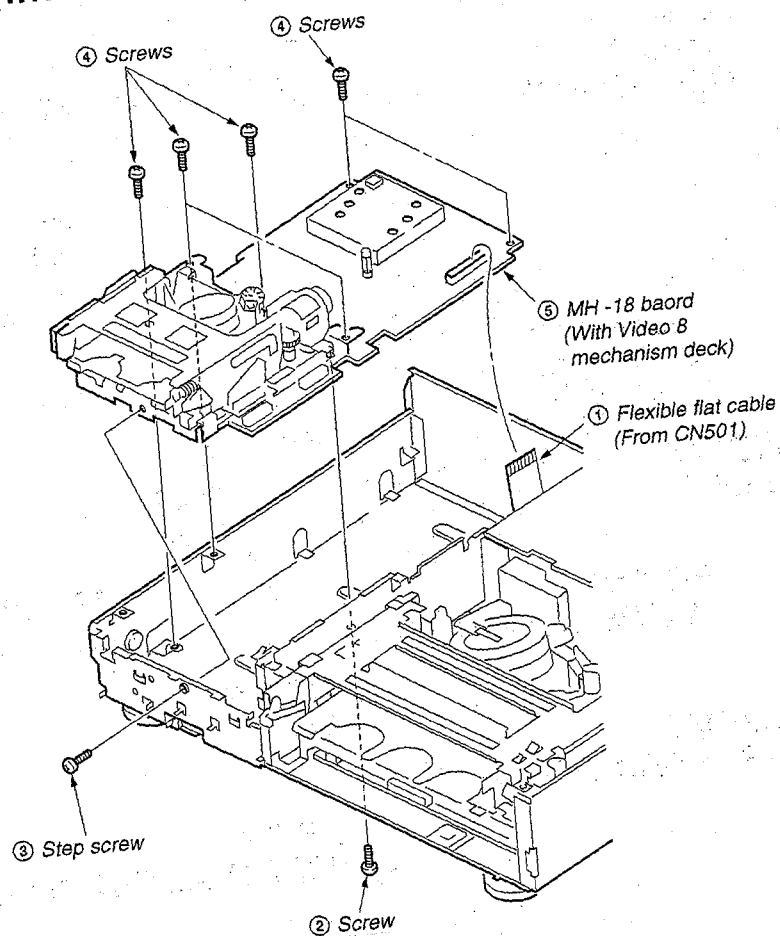
2-6. MV-34 BOARD



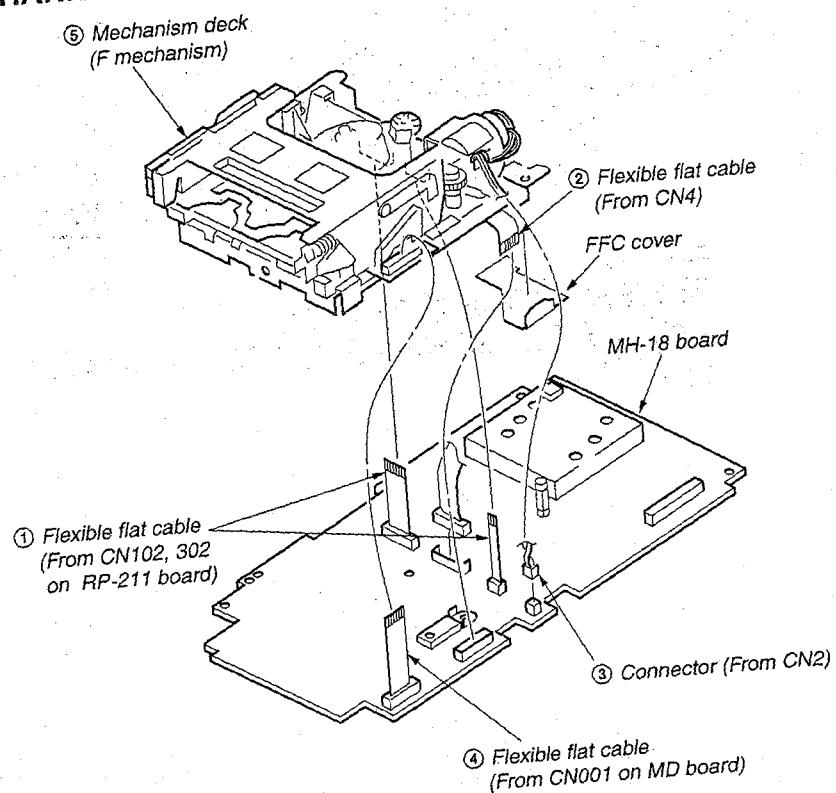
2-7. PS-380 BOARD



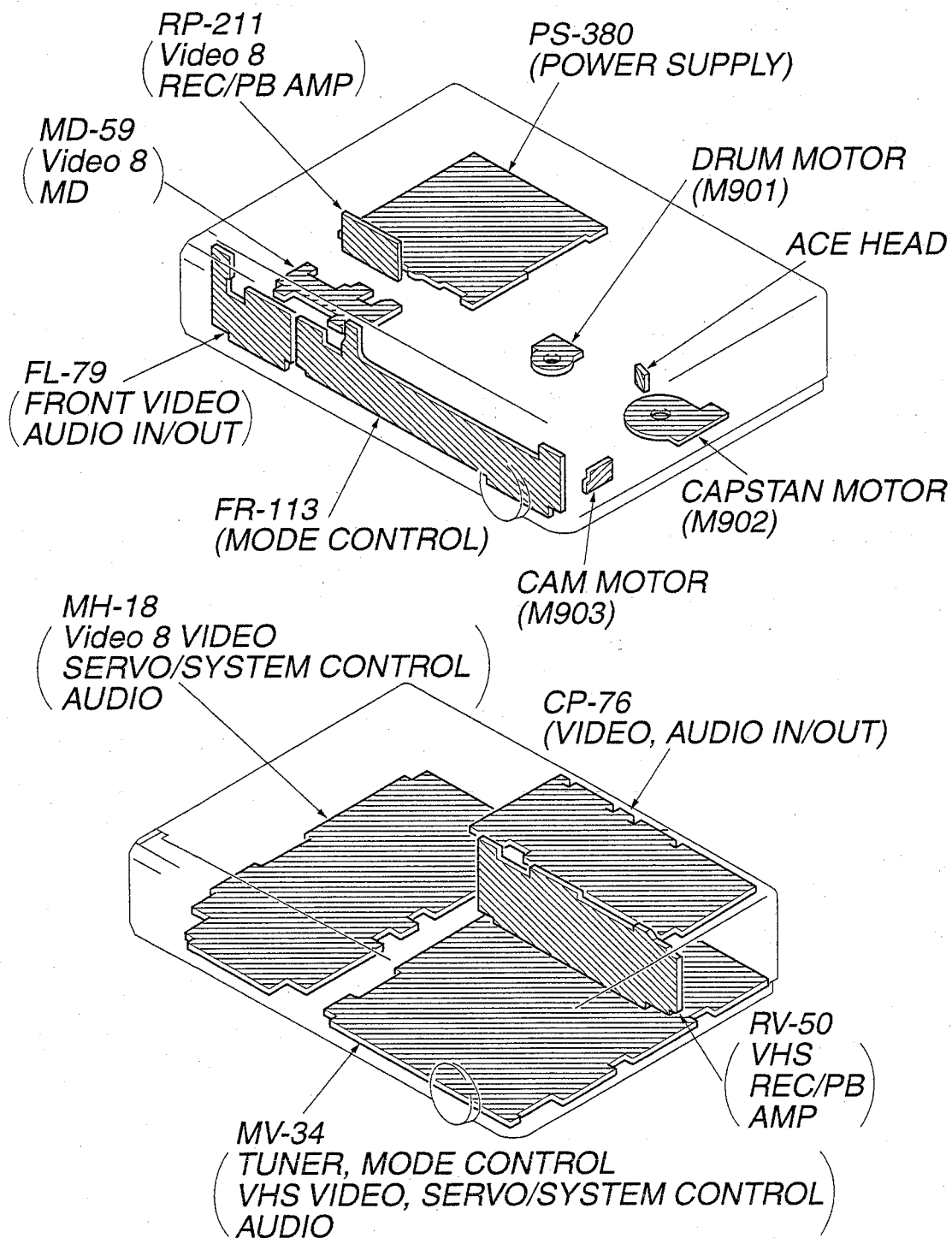
2-8. MH-18 BOARD (WITH Video 8 MECHANISM DECK)



2-9. Video 8 MECHANISM DECK (WITH RP-211 BOARD)



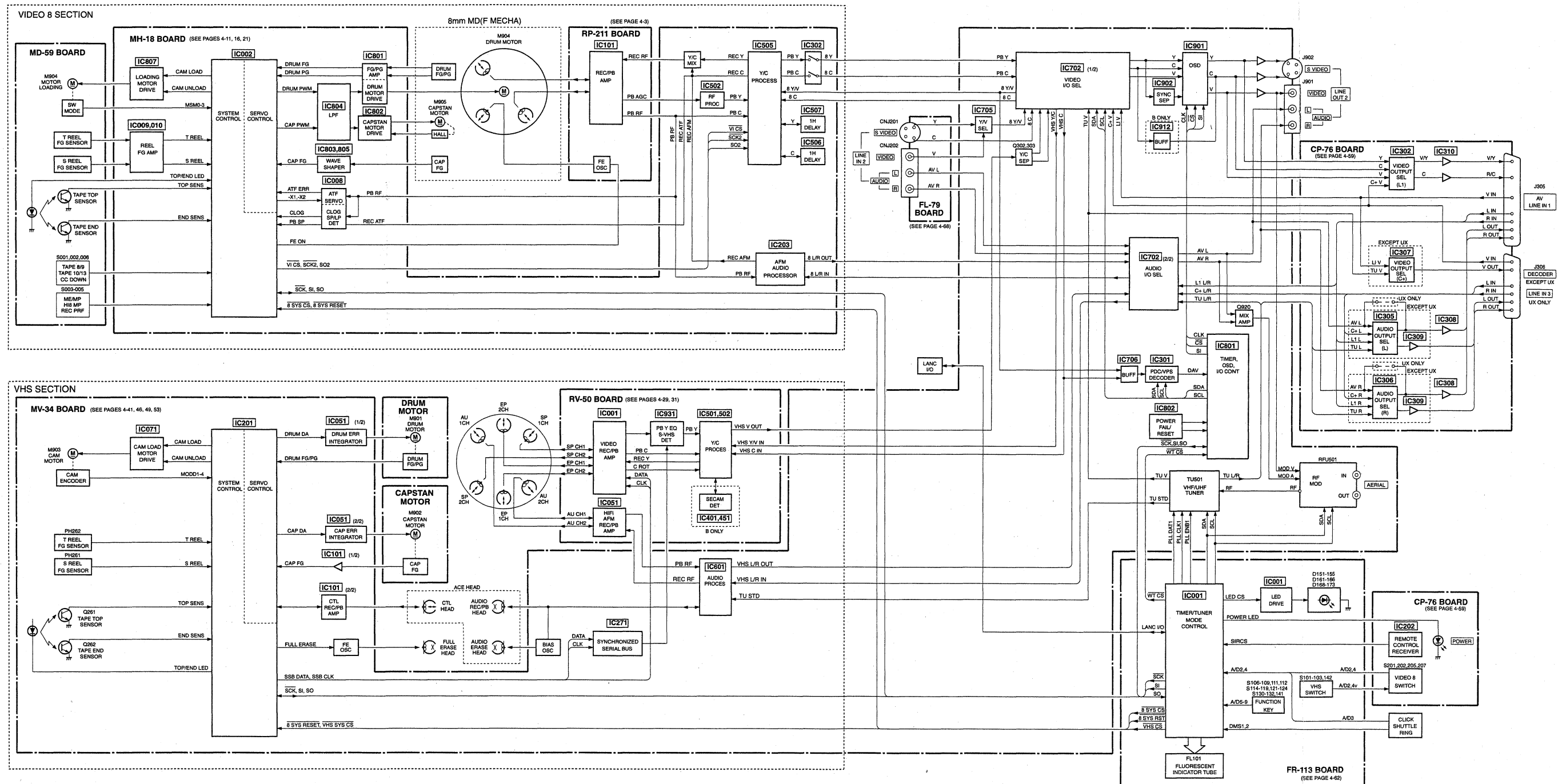
2-10. CIRCUIT BOARDS LOCATION

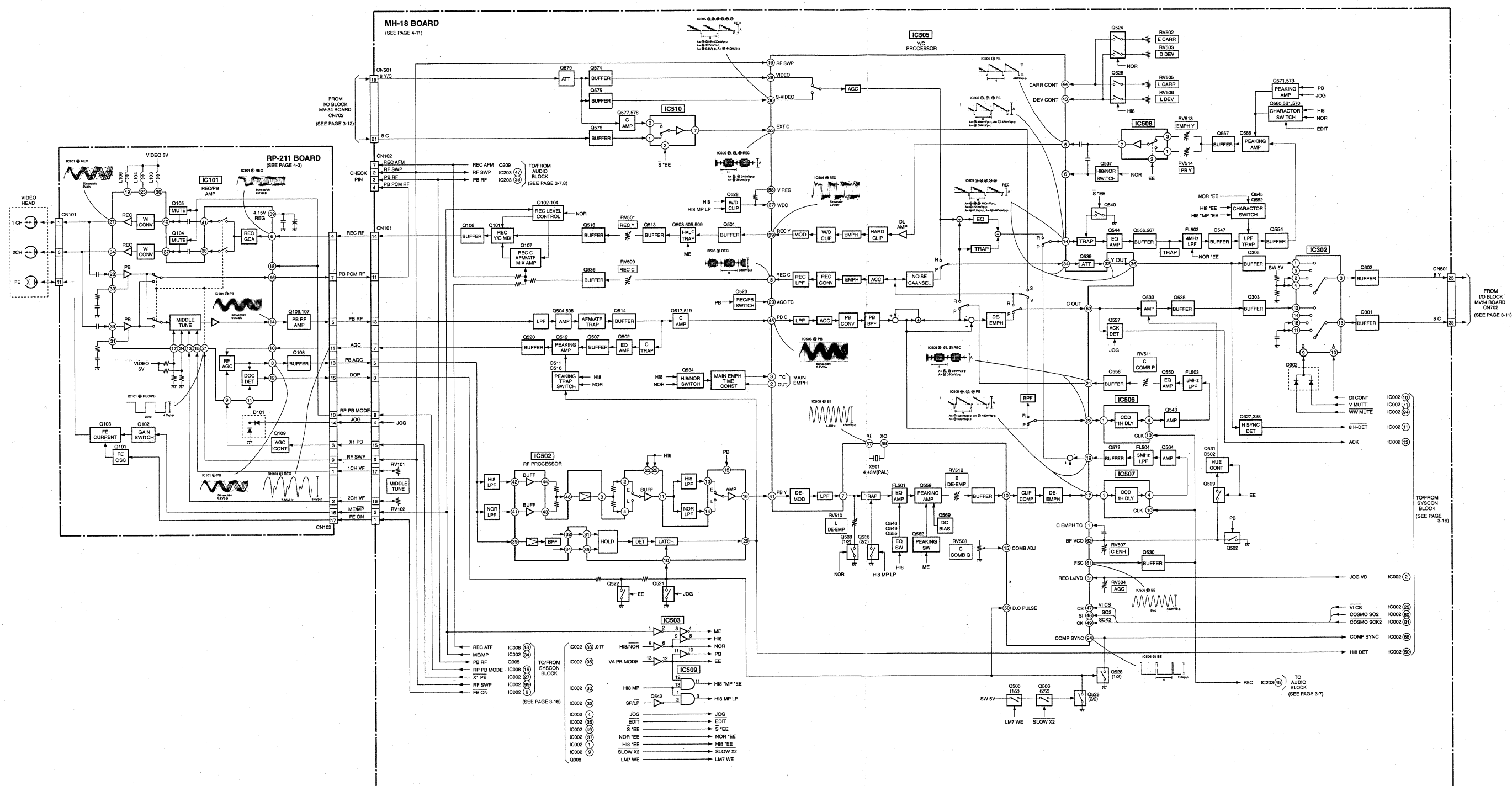


SECTION 3

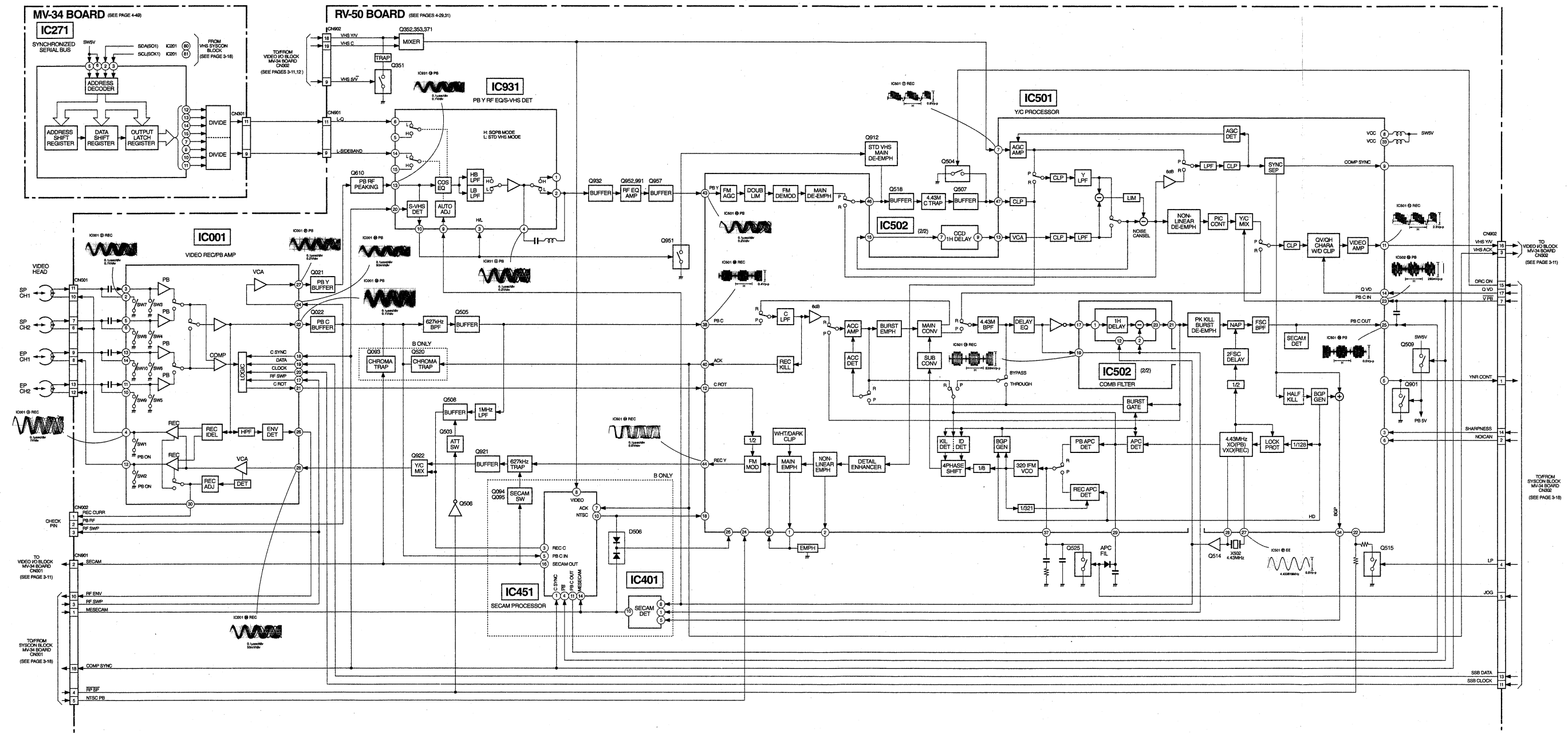
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

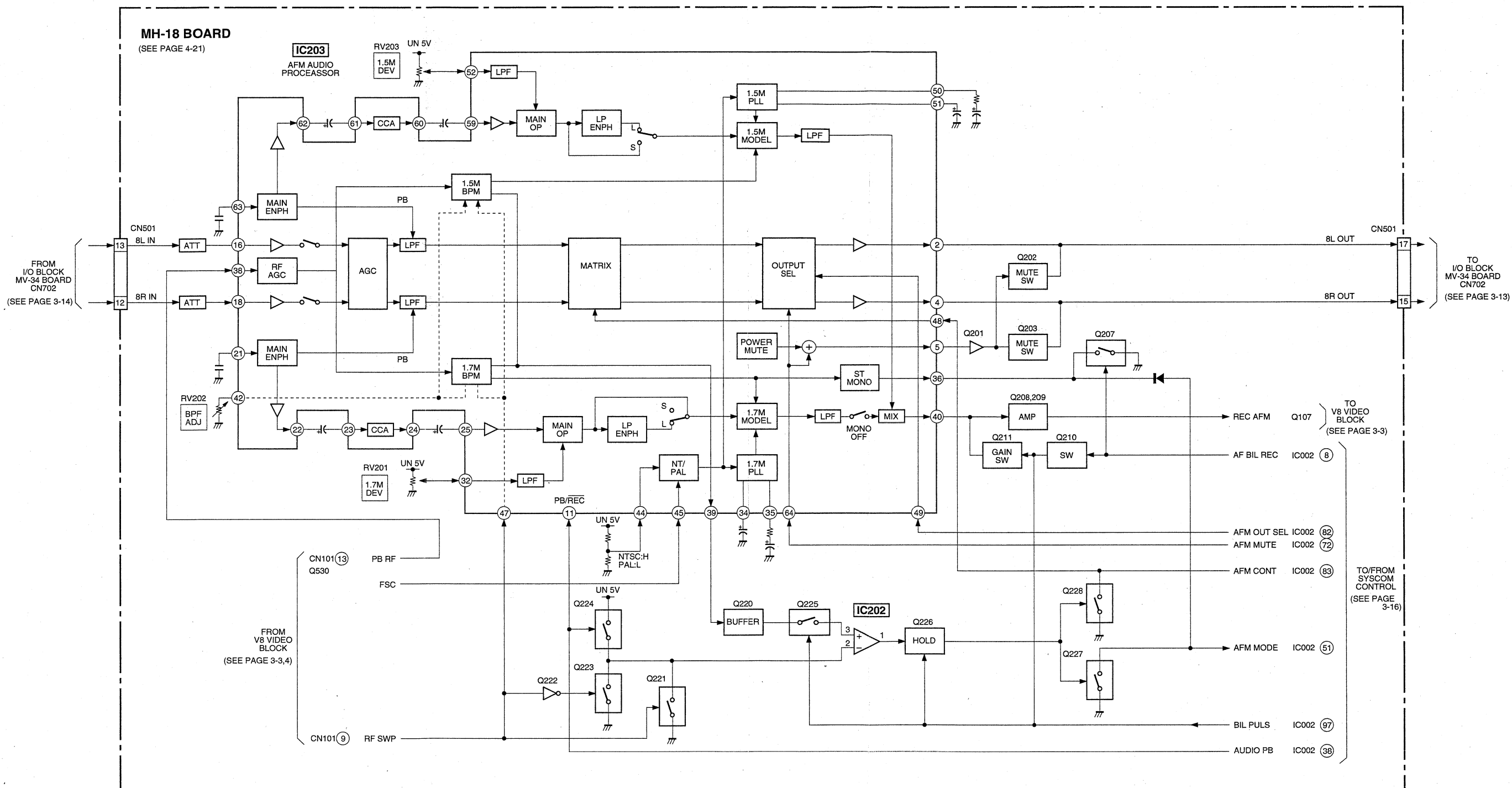




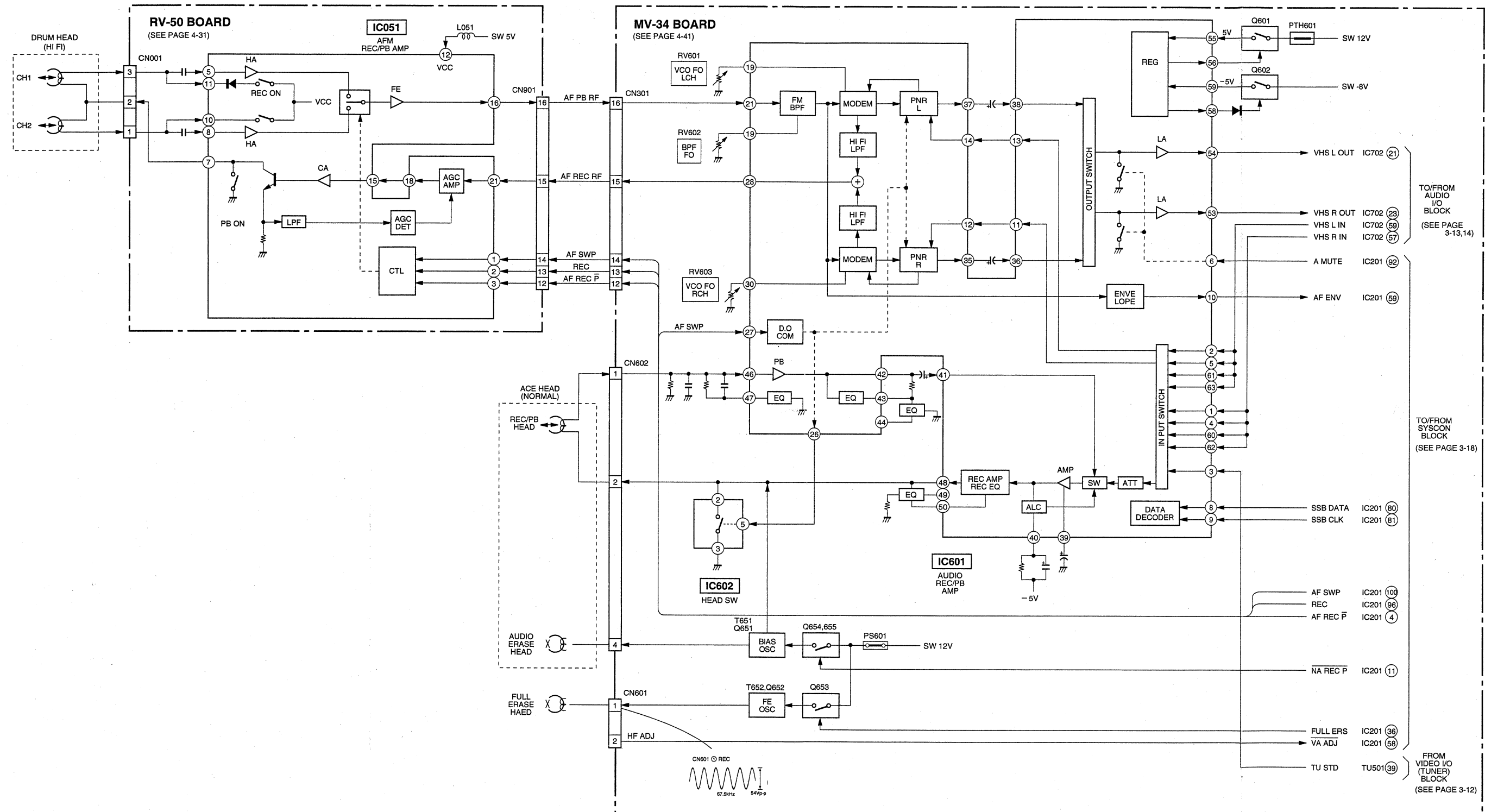
3-3. VHS VIDEO BLOCK DIAGRAM



3-4. Video 8 AUDIO BLOCK DIAGRAM

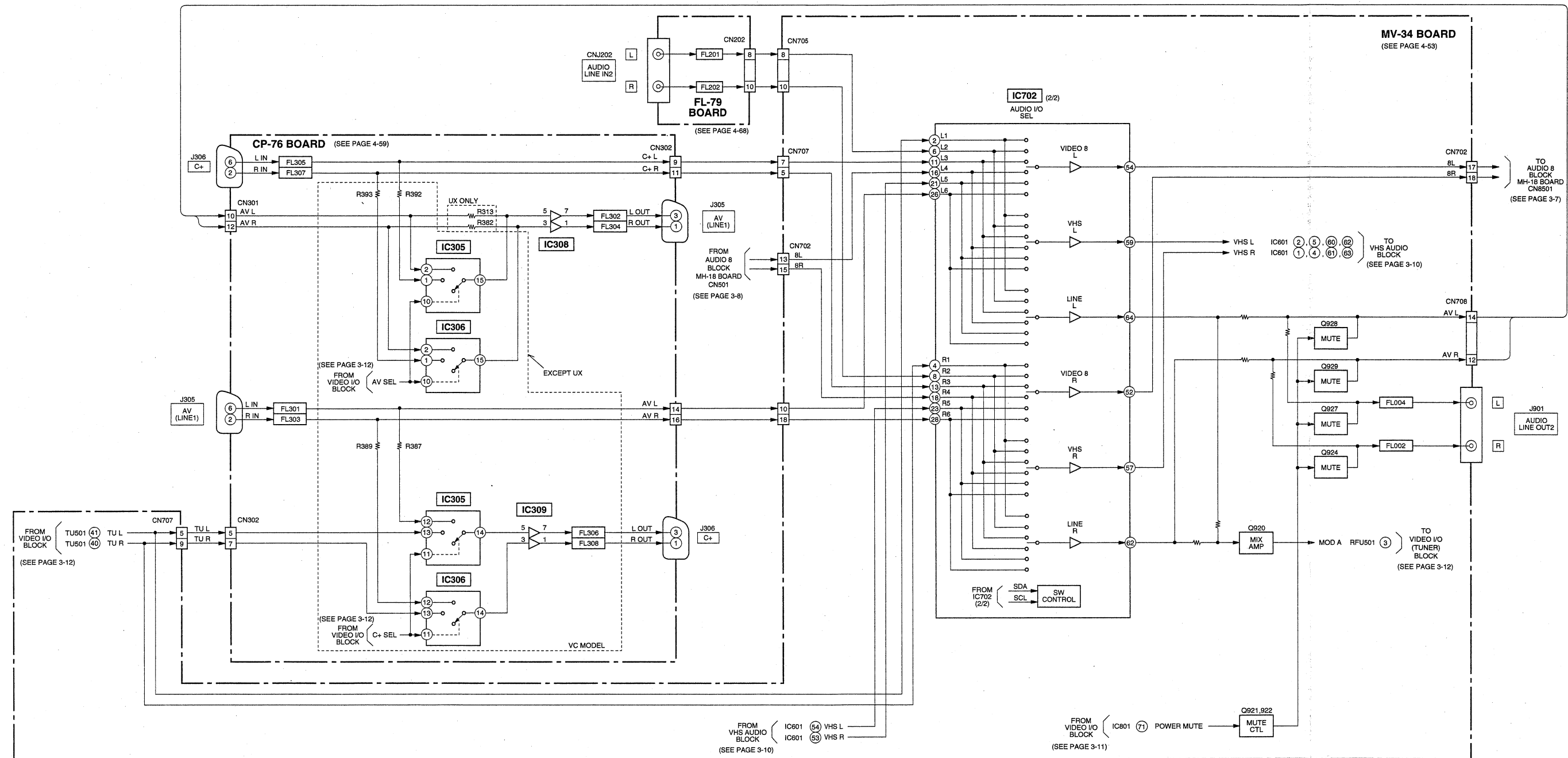


3-5. VHS AUDIO BLOCK DIAGRAM

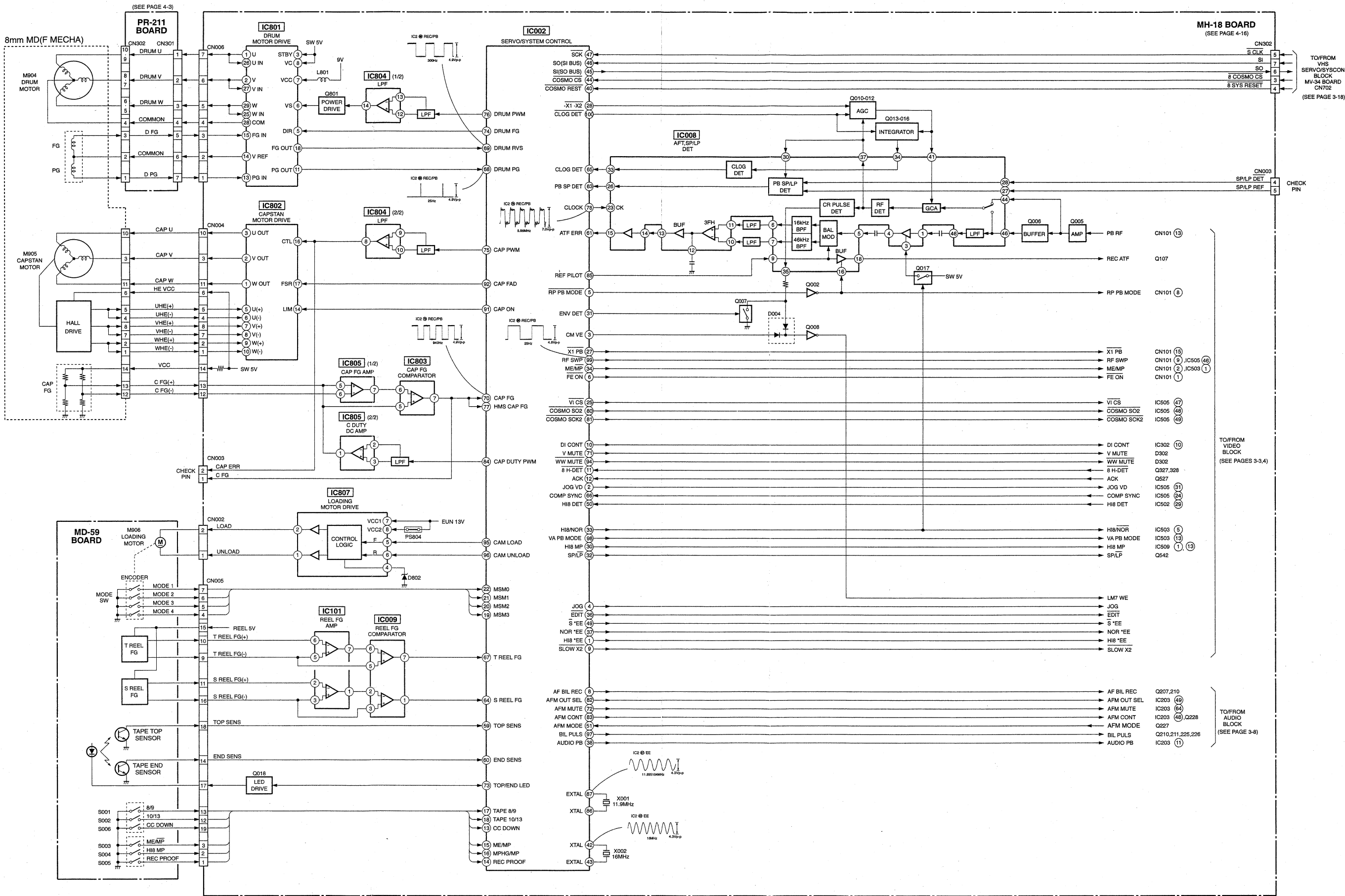




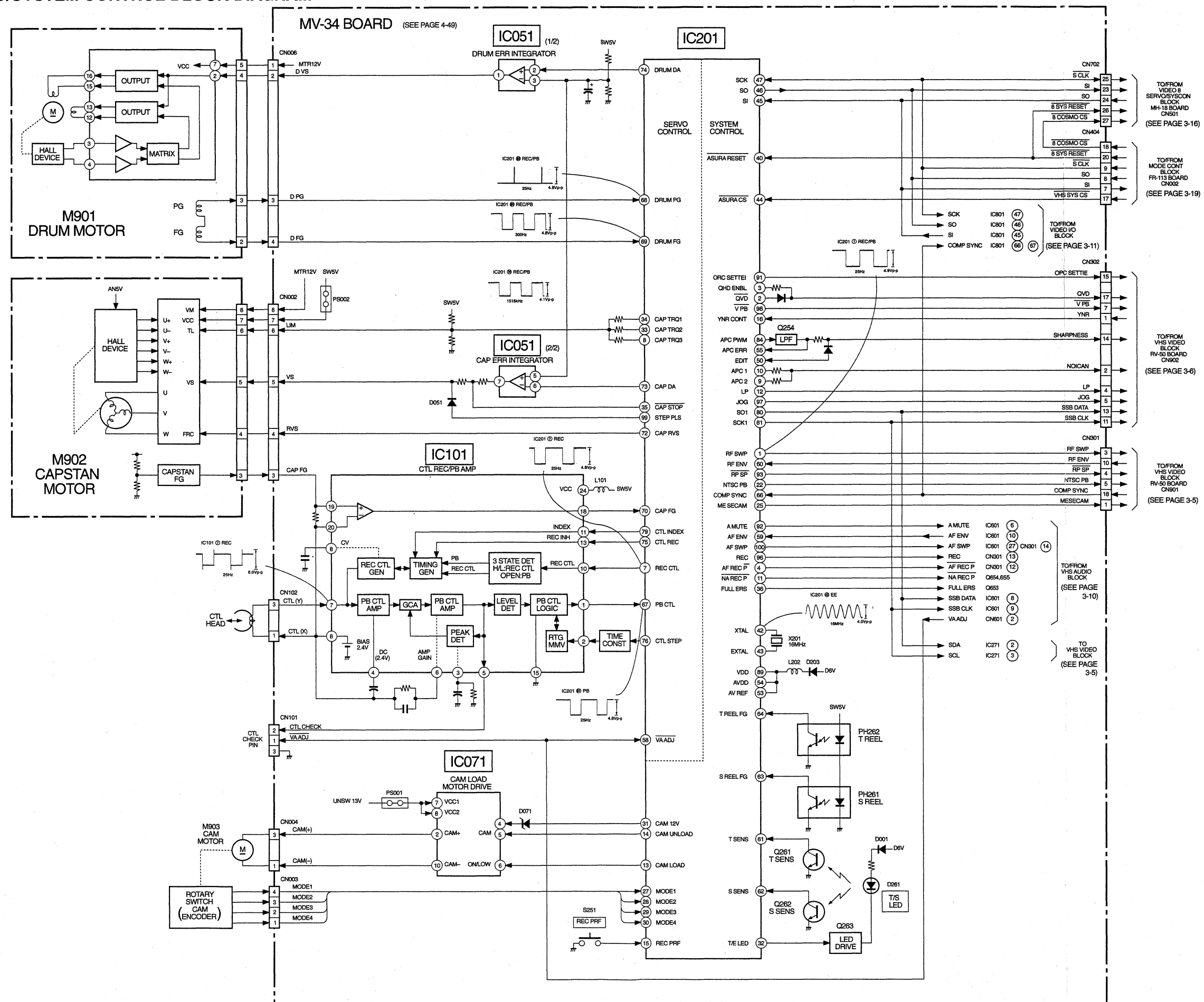
3-7. AUDIO IN/OUT BLOCK DIAGRAM



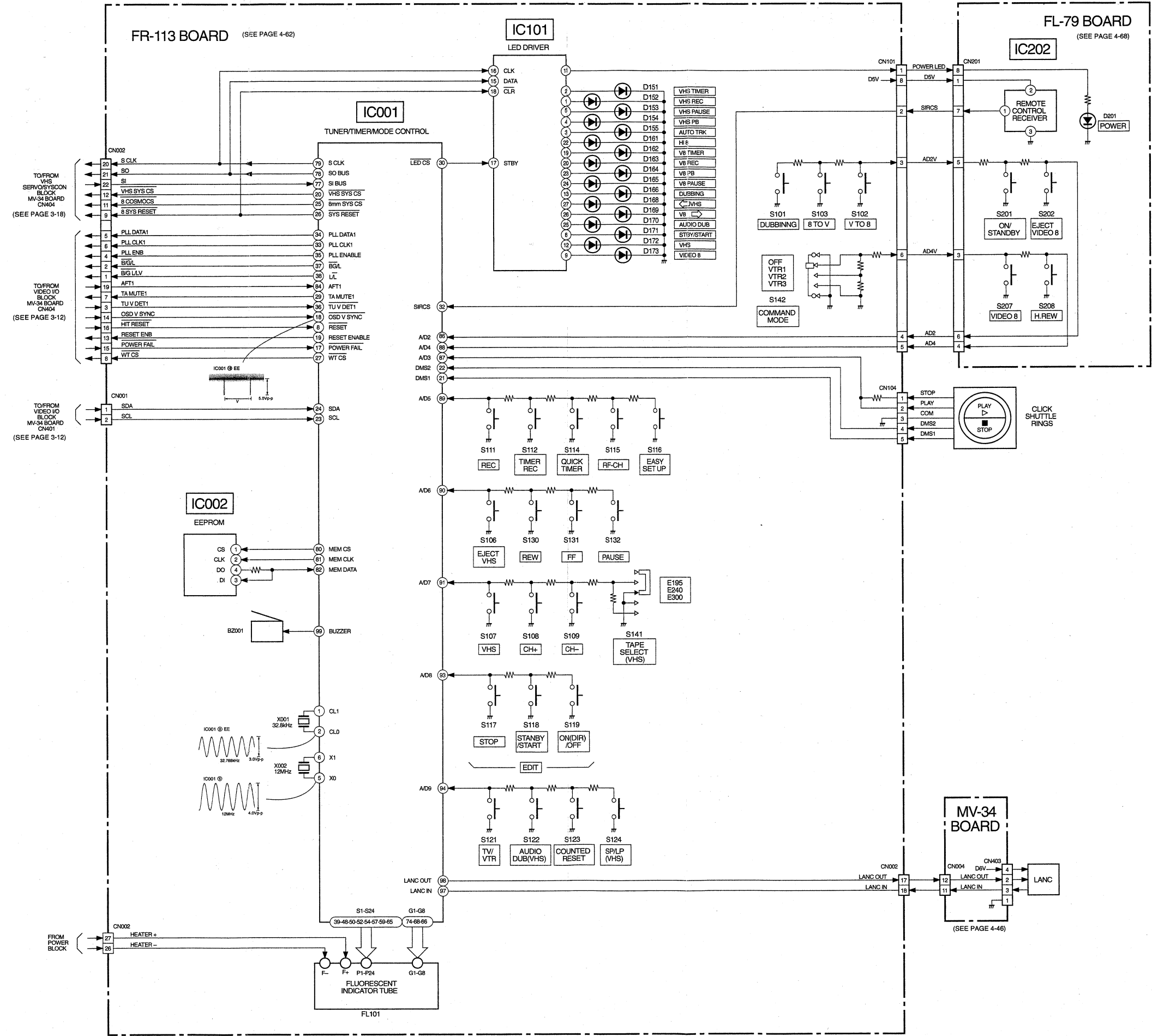
3-8. Video 8 SERVO/SYSTEM CONTROL BLOCK DIAGRAM



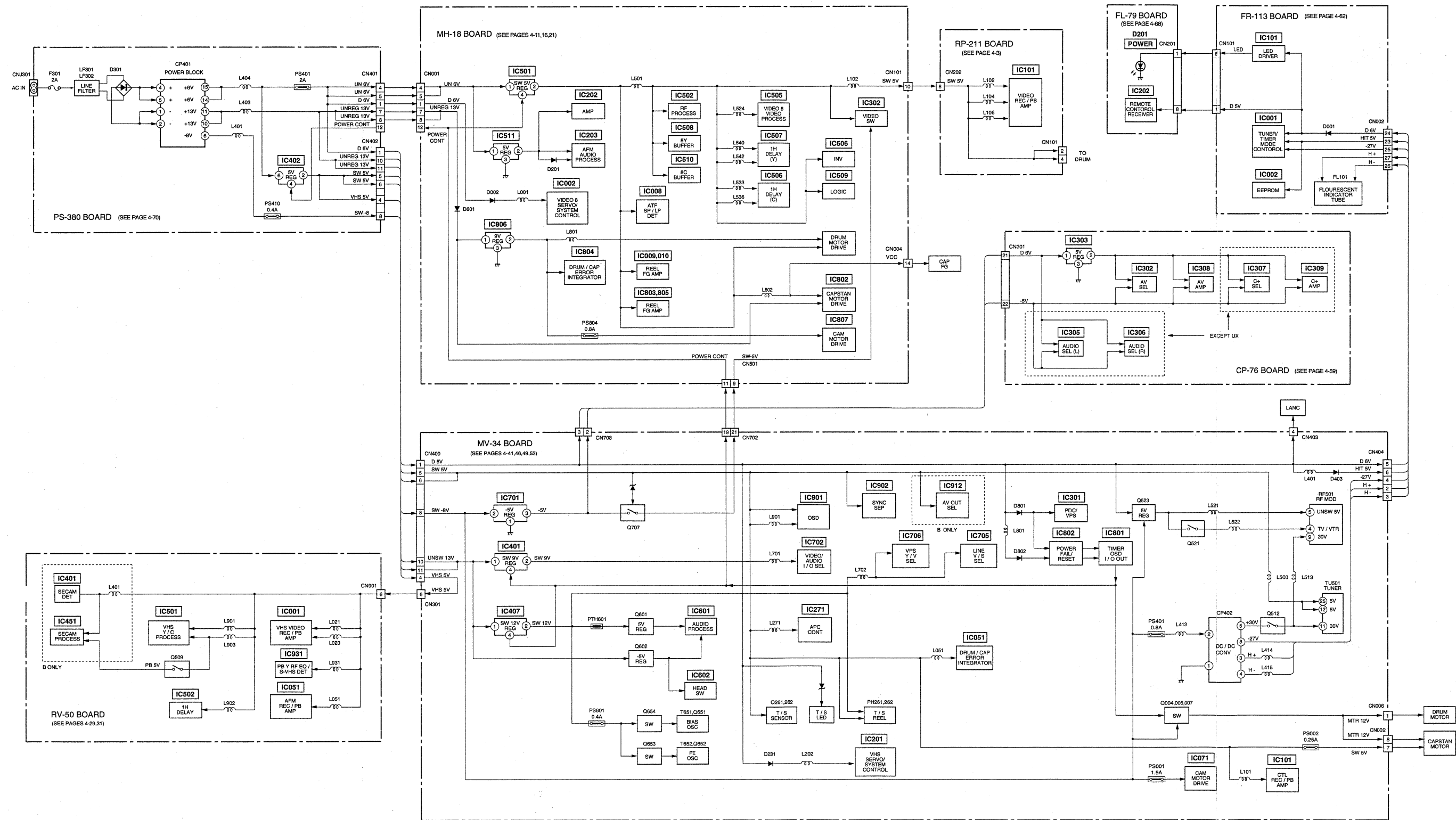
3-9. VHS SERVO/SYSTEM CONTROL BLOCK DIAGRAM



3-10.MODE CONTROL BLOCK DIAGRAM

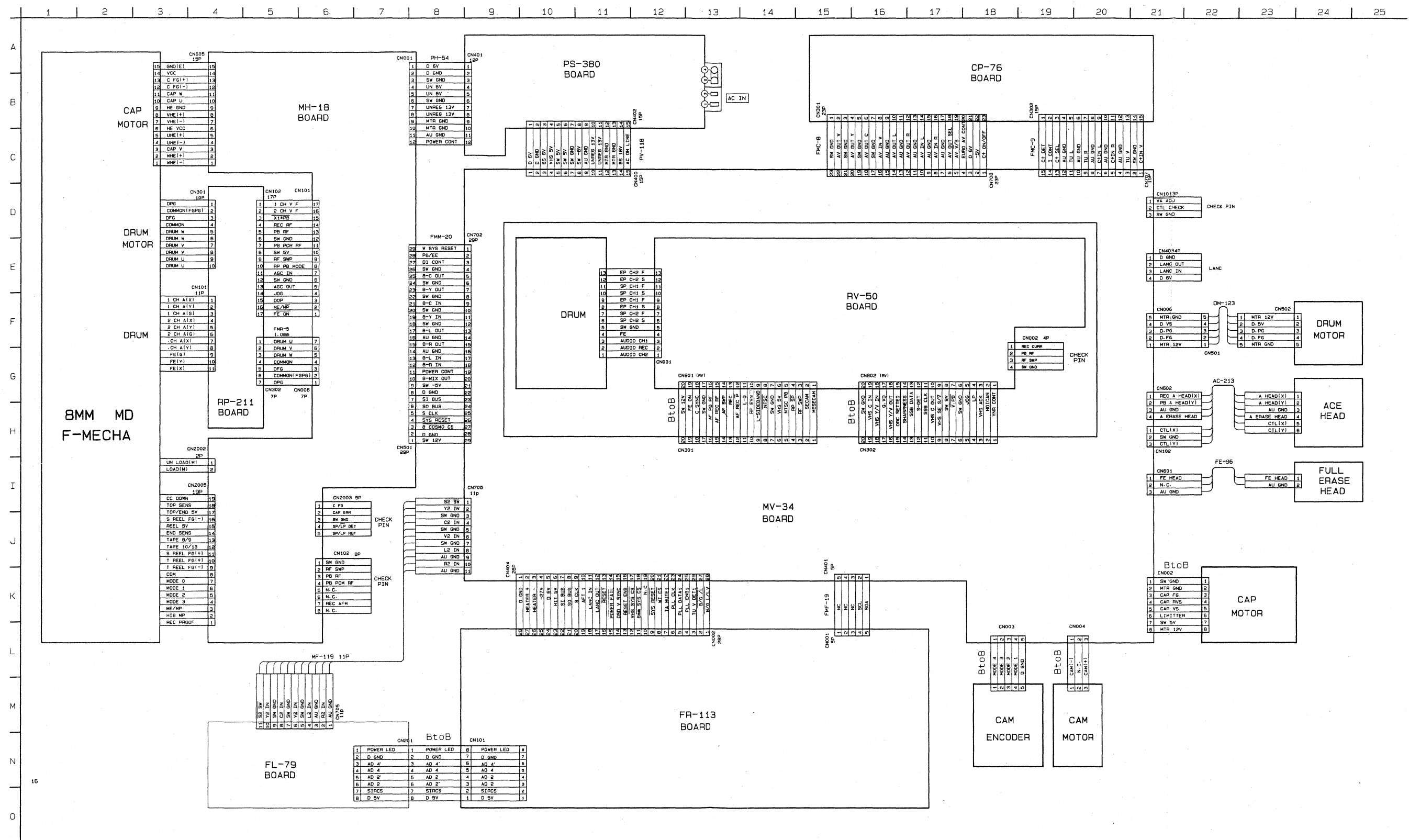


3-11. POWER SUPPLY BLOCK DIAGRAM

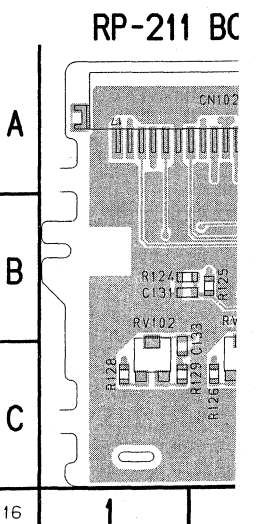
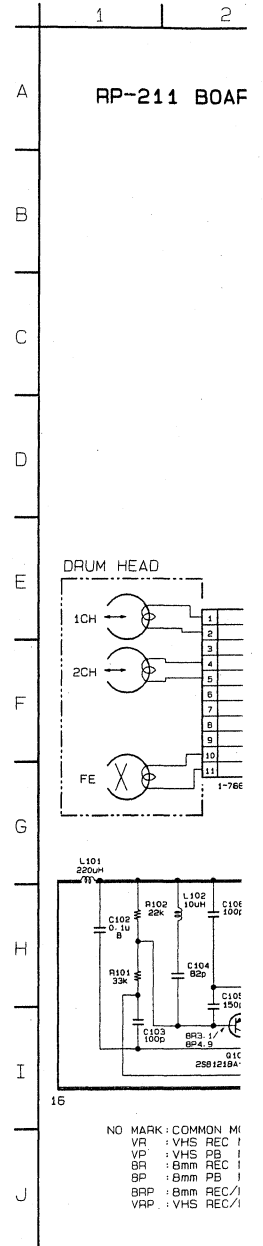


SECTION 4 PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. PRINTED WI RP-211 (Video 8 REC/ — Ref. No. RP211- Board

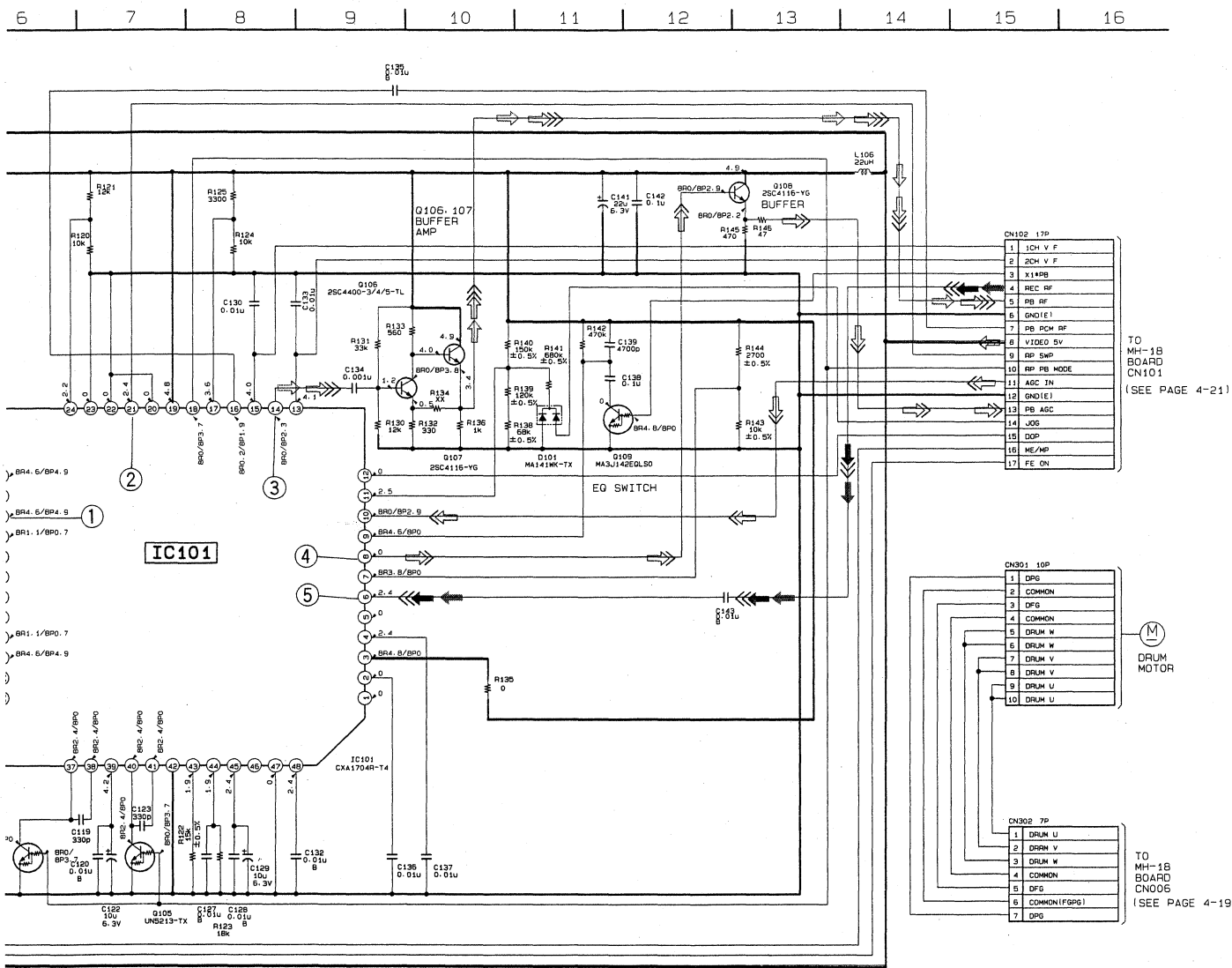


— Ref. No. RP211- Board; 1,000 Series —

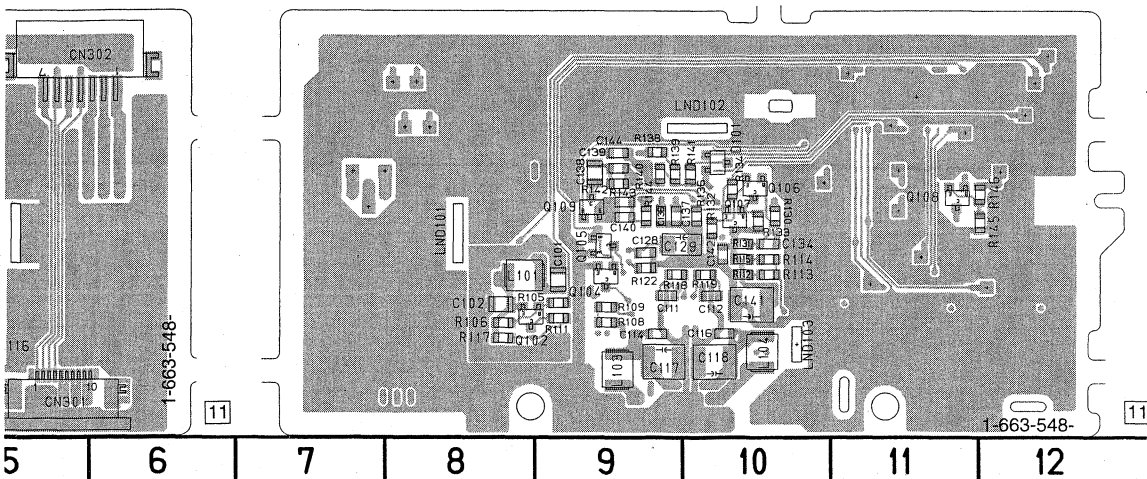
4-2

4-3

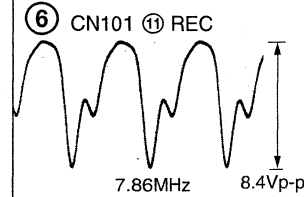
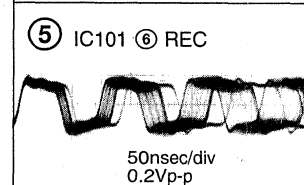
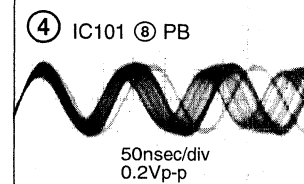
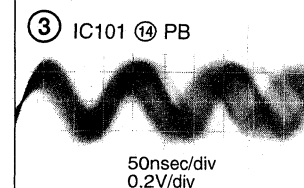
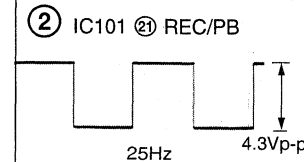
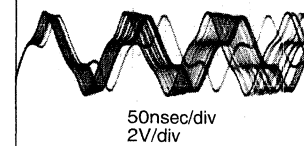
There are few cases that the part printed on this diagram isn't mounted in this model.



RP-211 BOARD (CONDUCTOR SIDE)

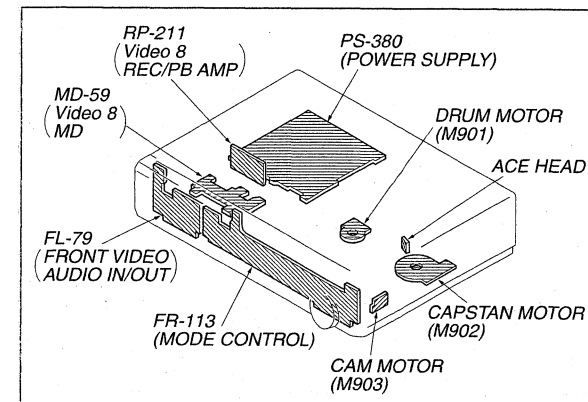


① IC101 ②⑦ REC



RP-211 BOARD

CN101	C-3
CN102	A-2
CN301	C-5
CN302	A-5
D101	B-10
IC101	B-3
Q101	C-4
Q102	C-8
Q103	C-5
Q104	B-9
Q105	B-9
Q106	B-10
Q107	B-10
Q108	B-11
Q109	B-9



**THIS NOTE IS COMMON FOR PRINTED WIRING
BOARDS AND SCHEMATIC DIAGRAMS.**
(In addition to this, the necessary note is
printed in each block.)

- **For printed wiring boards.**
- **Pattern** : Pattern from the side which enables seeing.

Caution :

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
--	--

Pattern face side: parts on the parts face side seen
(Component Side) from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistor are in ohms, 1/4W unless otherwise noted.
Chip resistor are 1/10W unless otherwise noted.
kΩ: 1000Ω, MΩ, : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μ.
μF. 50V or less are not indicated except for electrolytics and tantalums.
-  : panel designation.
-  : internal component.
-  : B+Line. *
-  : B+Line. *
-  : IN/OUT direction of (+,-) B LINE. *
- Circled numbers refer to waveforms. *
- Readings are taken with a PAL color-bar signal input.
- Readings are dc between ground and measurement points.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

When indicating parts by reference number, please include the board name.

- * : indicated by the color red.

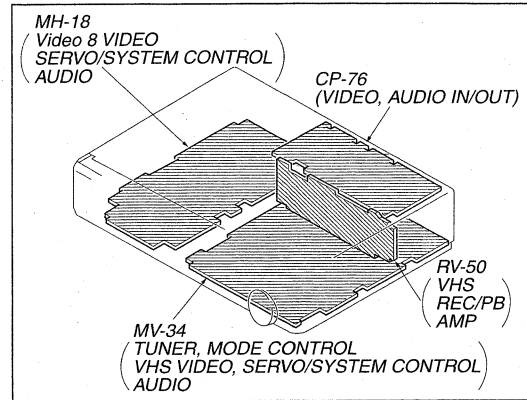
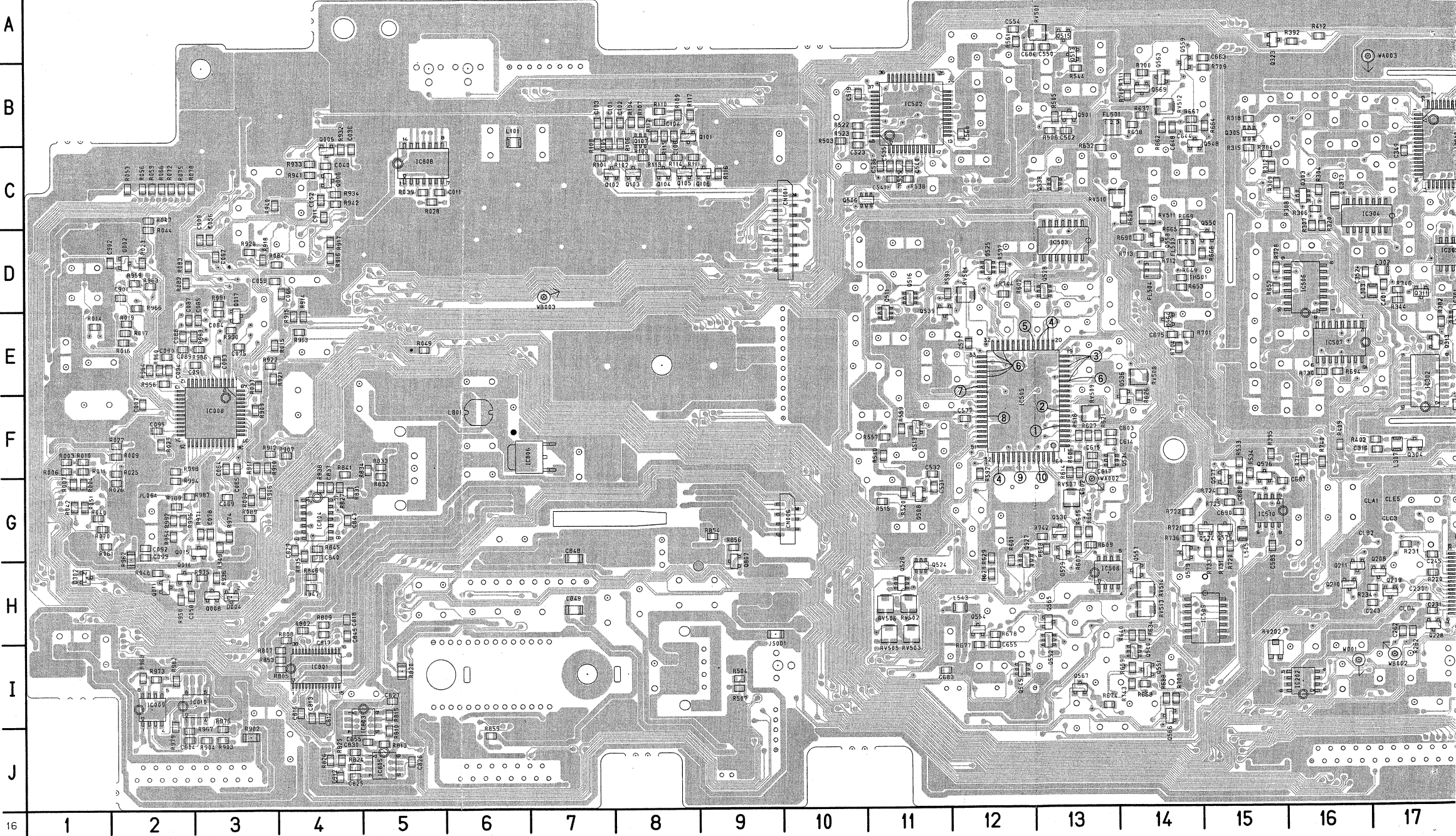
MH-18 (Video 8 VIDEO, SERVO/SYSTEM CONTROL, AUDIO) PRINTED WIRING BOARD
— Ref. No. MH-18 Board; 2,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

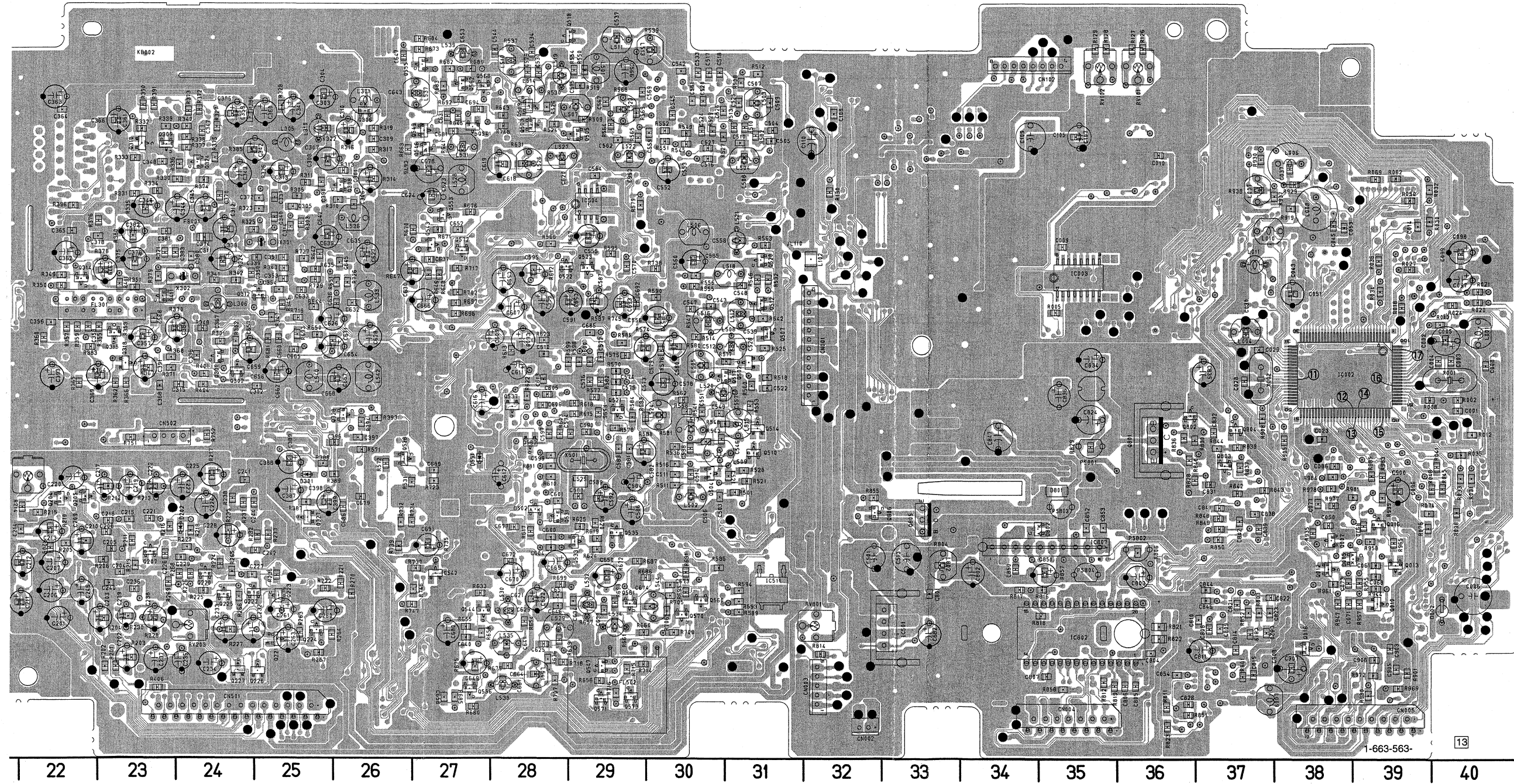
MH-18 BOARD

CN001	E-32	Q014	H-2	Q522	D-28
CN002	J-32	Q015	G-3	Q523	D-29
CN003	J-32	Q016	G-39	Q524	H-11
CN004	J-35	Q017	E-3	Q525	D-12
CN005	J-39	Q018	I-38	Q526	G-11
CN006	G-10	Q101	B-8	Q527	H-12
CN101	C-10	Q102	C-7	Q528	D-13
CN102	B-35	Q103	C-8	Q530	G-13
CN501	J-24	Q104	C-8	Q532	F-28
		Q106	C-9	Q533	H-29
D002	I-40	Q107	B-8	Q534	F-13
D004	H-3	Q201	I-19	Q535	H-29
D005	H-39	Q202	I-19	Q536	F-14
D201	H-19	Q203	J-19	Q537	F-28
D202	H-24	Q207	H-23	Q538	C-13
D301	G-25	Q208	H-17	Q539	E-11
D302	H-1	Q209	H-17	Q540	I-14
D502	G-28	Q210	H-16	Q541	B-27
D801	G-35	Q211	H-16	Q542	H-27
D802	H-35	Q220	H-24	Q543	D-27
		Q221	I-25	Q544	I-27
IC002	F-38	Q222	H-24	Q545	I-12
IC008	F-3	Q223	H-25	Q546	C-27
IC009	I-2	Q224	I-25	Q547	I-29
IC010	I-3	Q225	H-24	Q548	C-14
IC202	I-16	Q226	I-25	Q549	B-27
IC203	H-18	Q227	I-24	Q550	D-15
IC302	E-17	Q228	H-17	Q552	H-13
IC501	I-33	Q301	E-24	Q554	H-12
IC502	B-11	Q302	F-24	Q555	B-27
IC503	D-13	Q303	C-16	Q556	J-27
IC505	F-12	Q305	B-15	Q557	H-14
IC506	D-16	Q327	G-25	Q558	D-14
IC507	E-16	Q328	F-26	Q559	B-14
IC508	H-13	Q410	D-19	Q560	H-30
IC509	H-15	Q411	E-23	Q561	I-29
IC510	G-15	Q501	B-13	Q562	B-27
IC511	H-21	Q502	E-31	Q563	B-14
IC801	I-4	Q503	B-28	Q564	E-14
IC802	I-35	Q504	G-30	Q565	H-13
IC803	I-5	Q505	B-29	Q567	I-13
IC804	G-4	Q506	C-11	Q569	B-14
IC805	J-5	Q507	E-31	Q570	I-30
IC806	F-6	Q508	G-11	Q571	J-29
IC807	H-35	Q509	B-28	Q572	D-27
		Q511	E-11	Q573	J-29
Q002	D-2	Q512	E-31	Q574	G-15
Q005	C-4	Q513	A-13	Q575	G-15
Q006	C-4	Q514	F-31	Q576	G-15
Q007	H-38	Q516	D-11	Q577	G-15
Q008	H-3	Q517	F-31	Q578	G-26
Q010	H-39	Q518	A-19	Q579	H-14
Q011	H-2	Q519	F-11	Q801	F-36
Q012	H-38	Q520	D-31		
Q013	H-39	Q521	F-29		

MH-18 BOARD (COMPONENT SIDE)



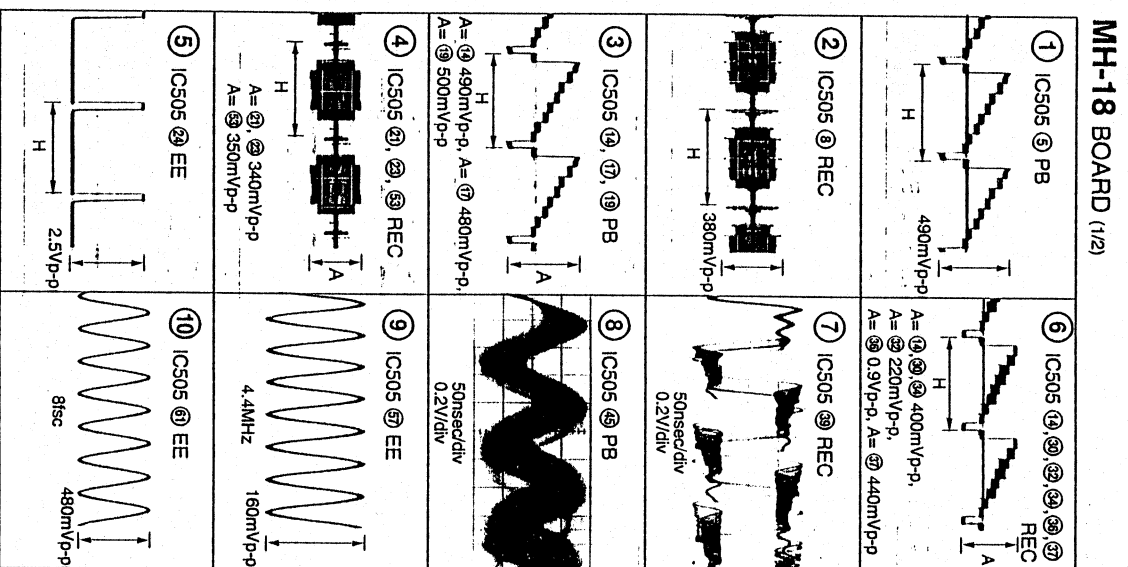
18 BOARD (CONDUCTOR SIDE)



MH-18 (Video 8 VIDEO) SCHEMATIC DIAGRAM

— Ret. No. MH-18 Board; 2,000 Series —

- See page 4-6 for MH-18 BOARD printed wiring board.



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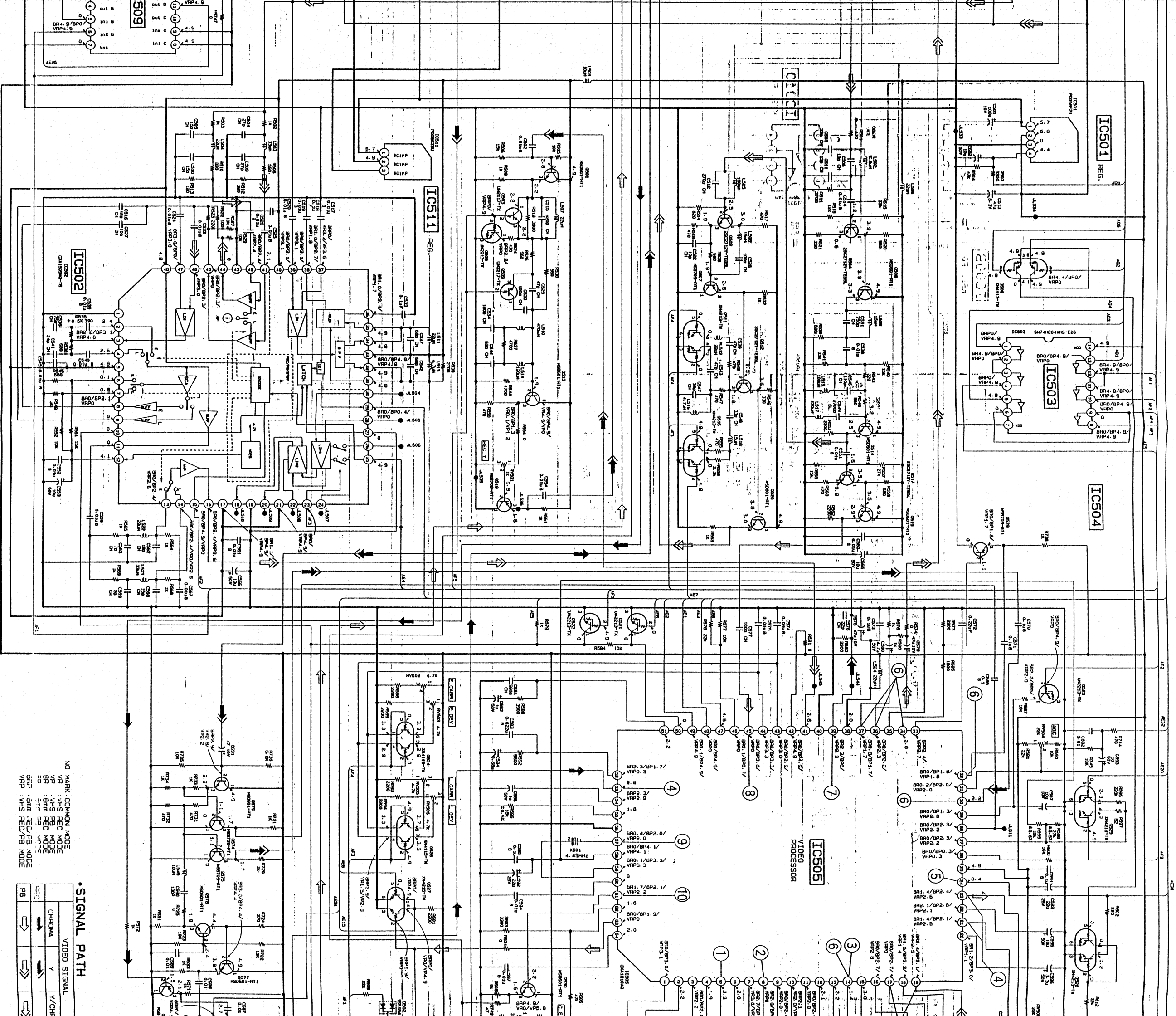
16

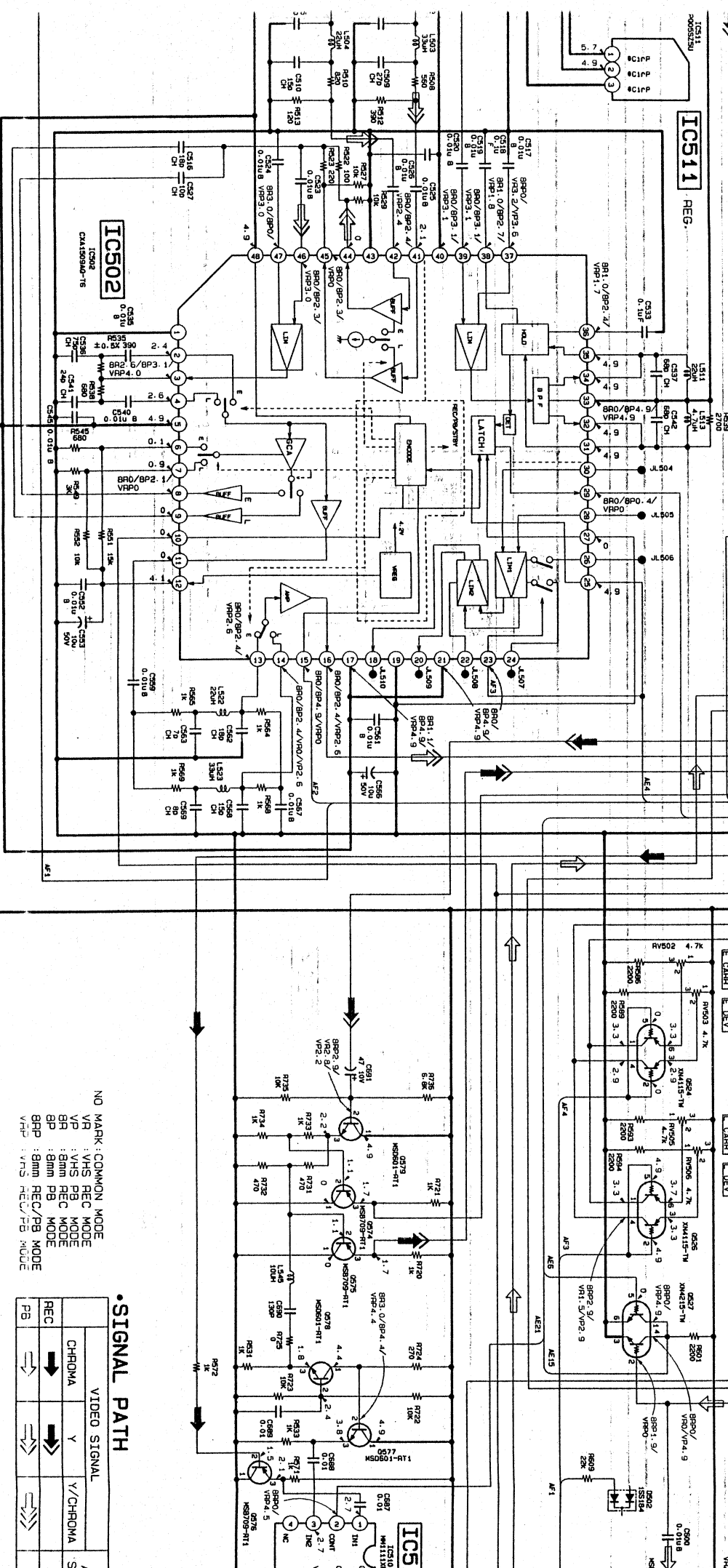
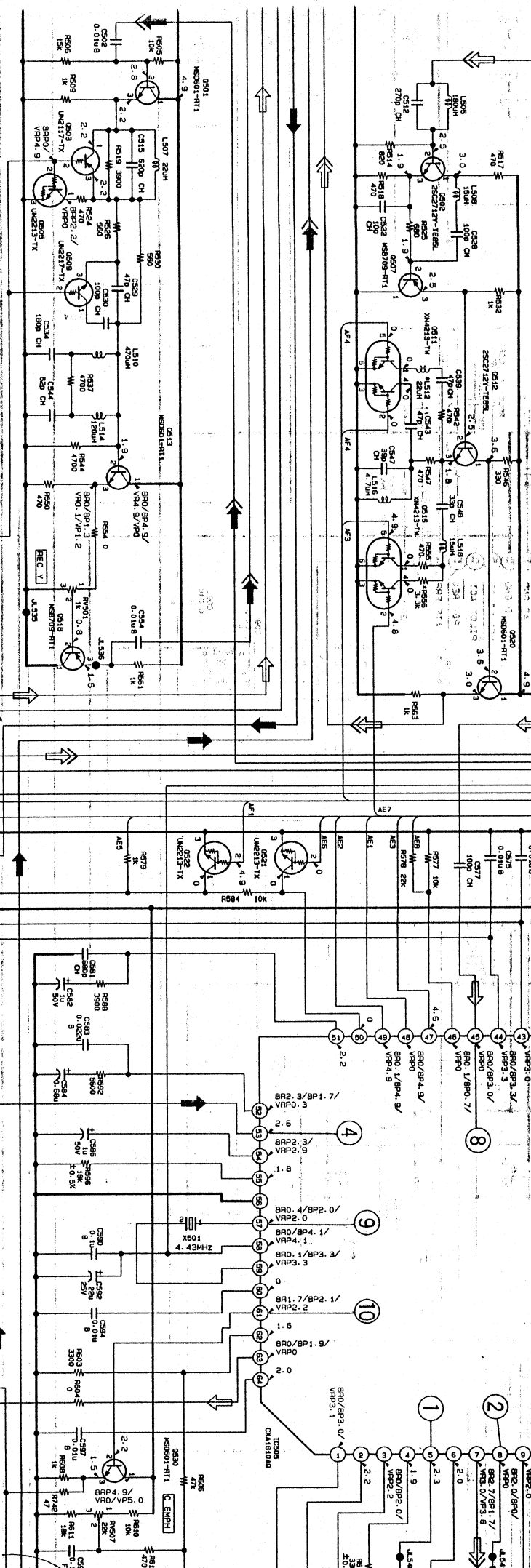
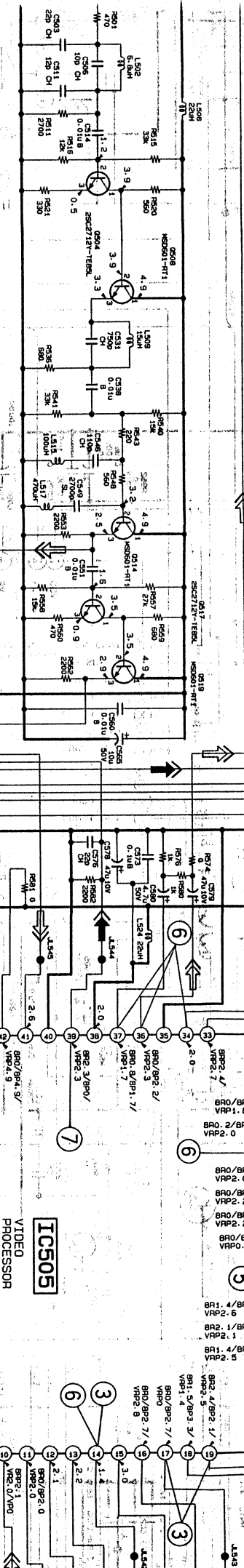
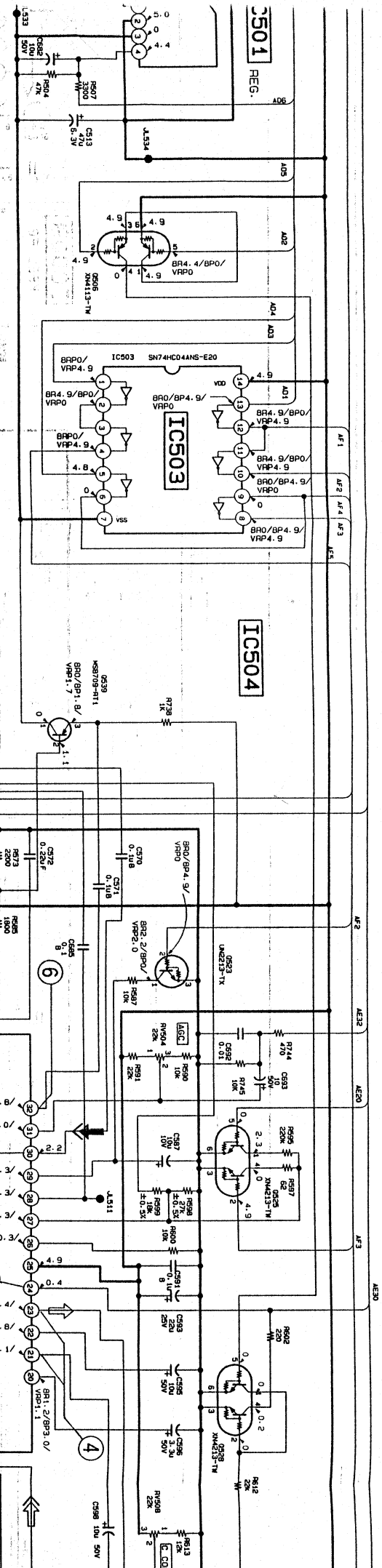
17

18

19

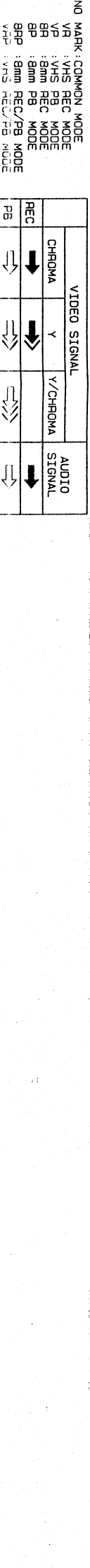
20

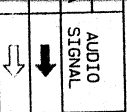




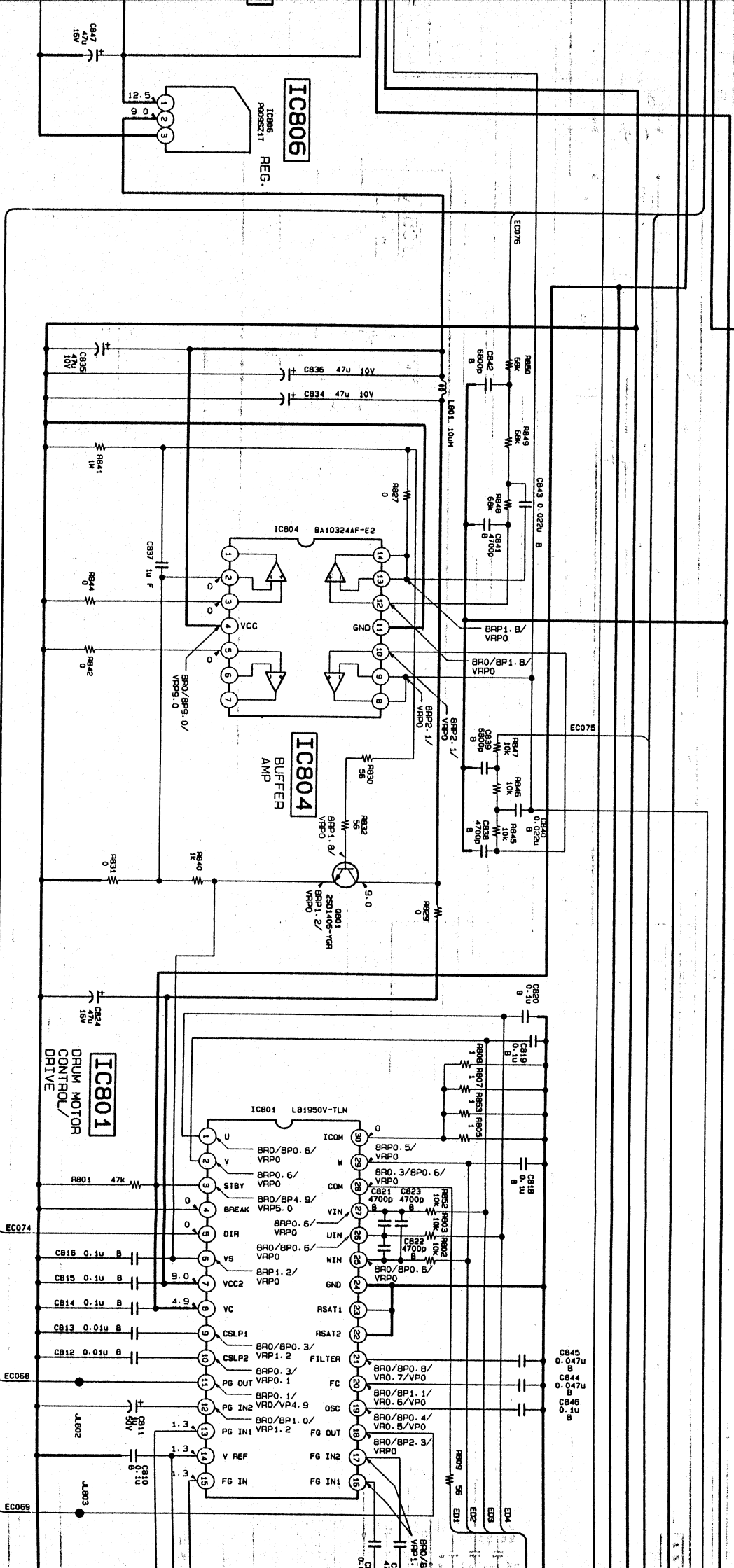
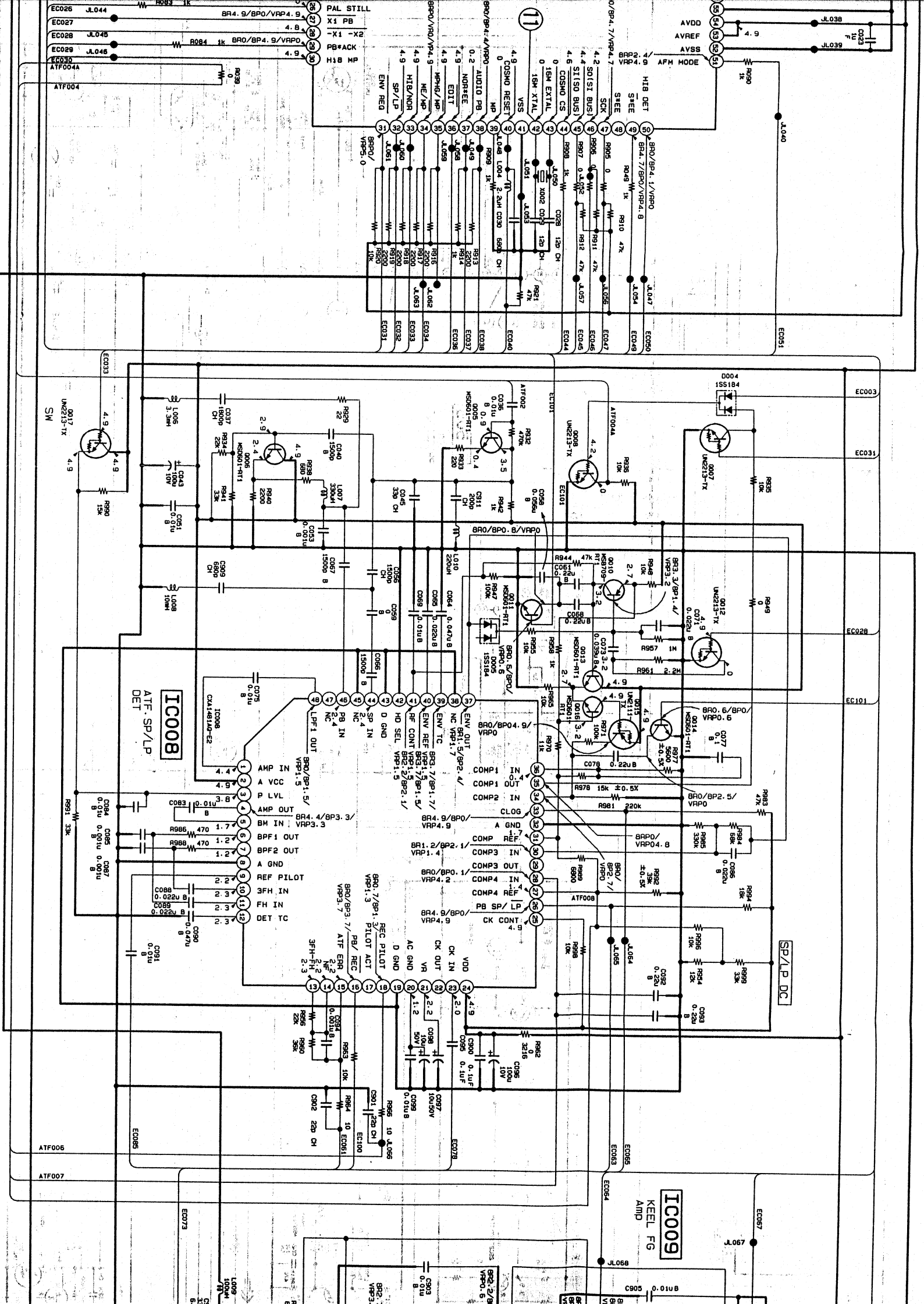
• SIGNAL PATH

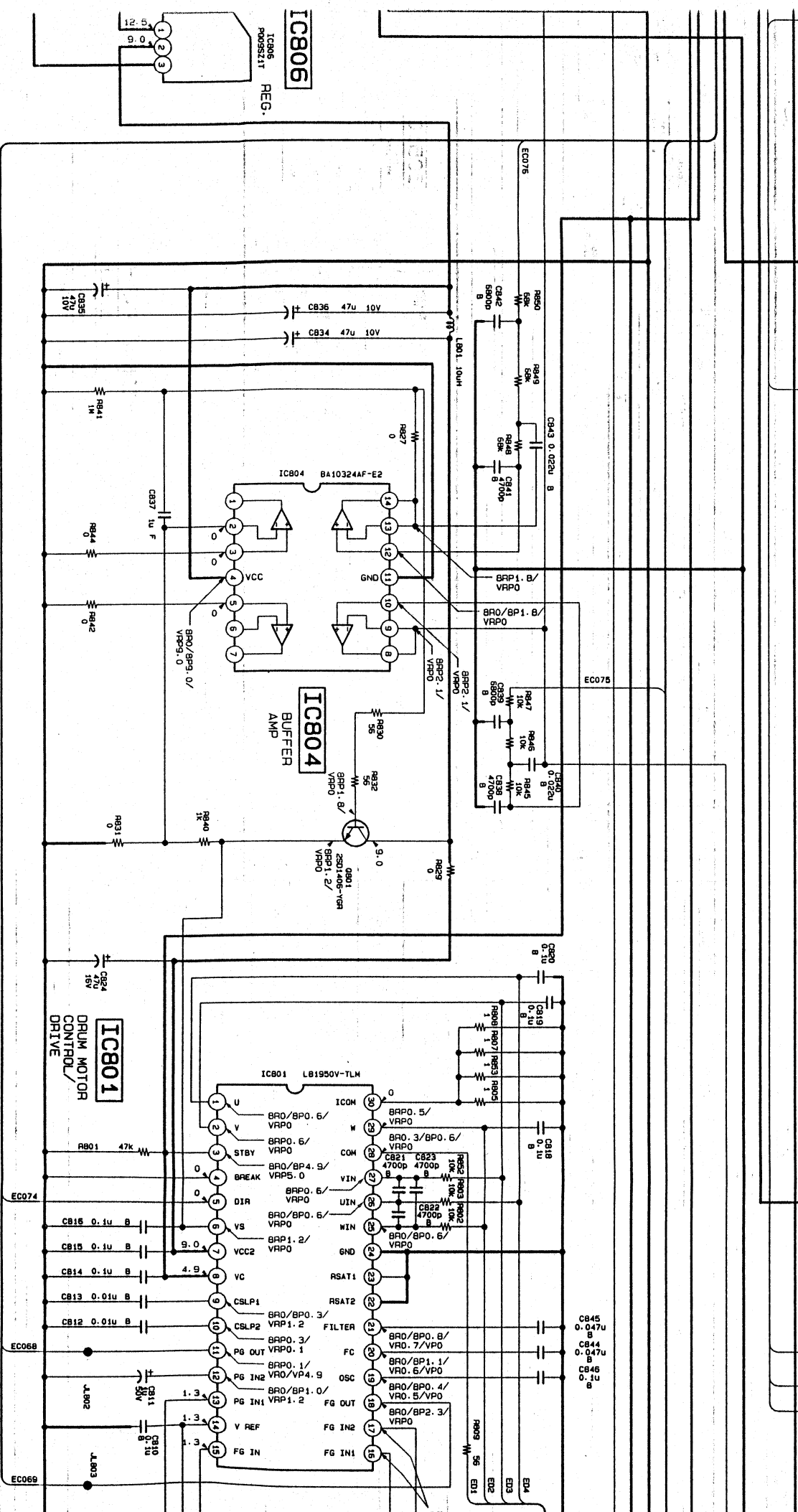
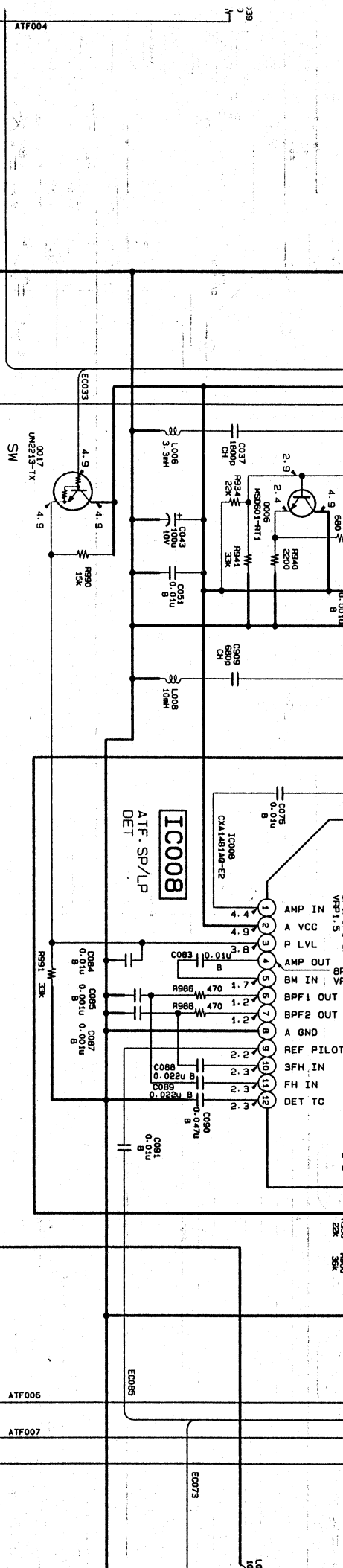
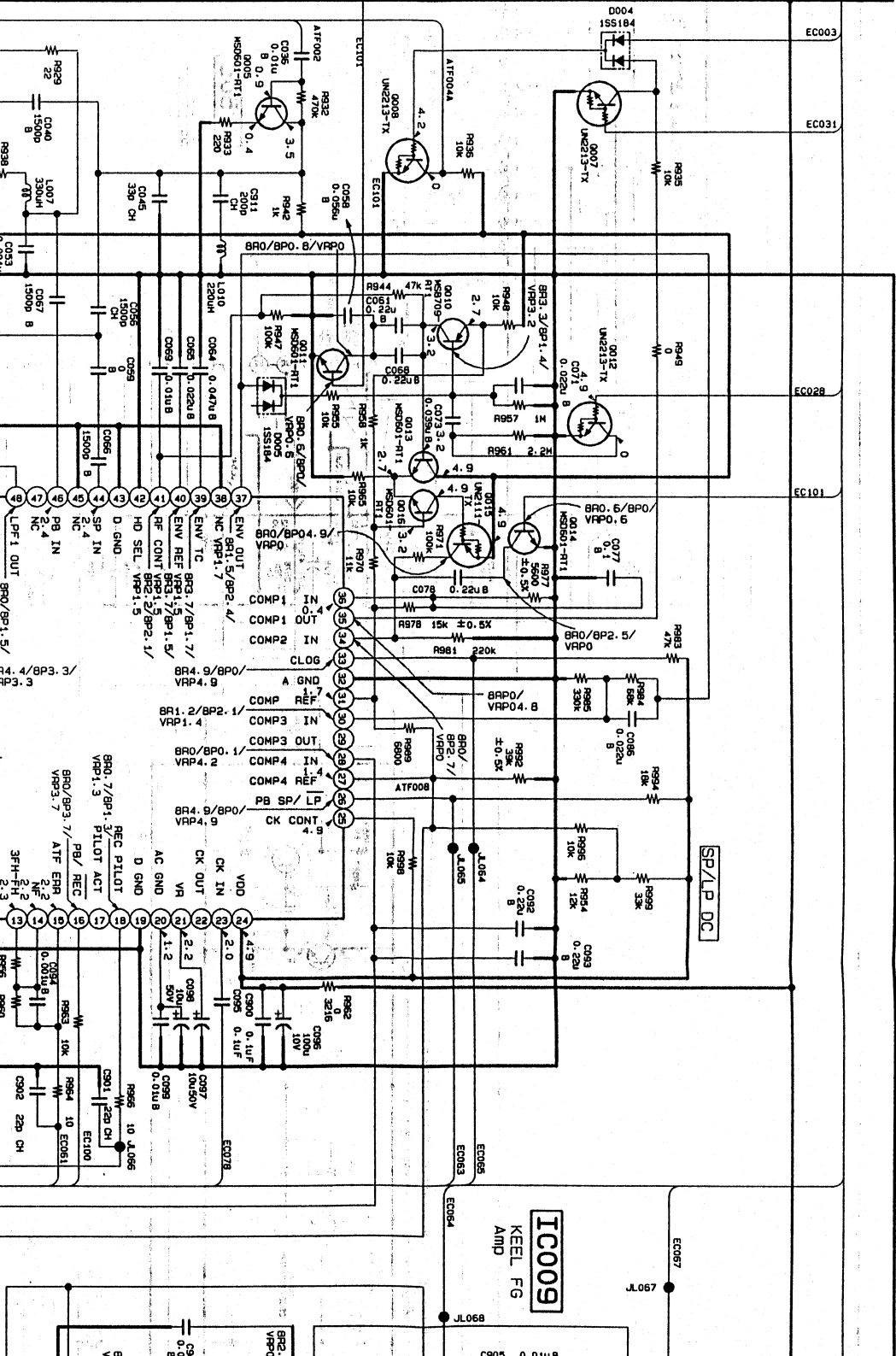
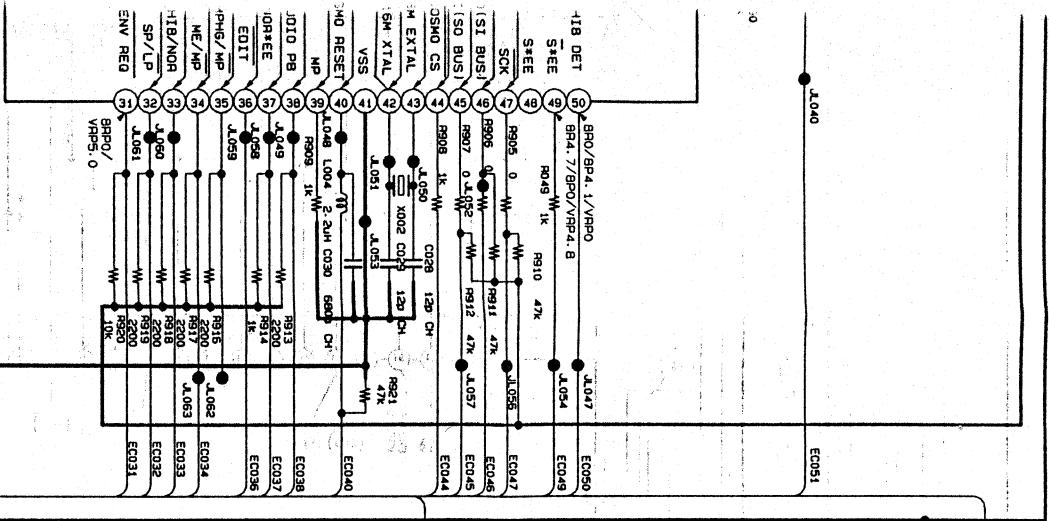
VIDEO SIGNAL	VIDEO PATH	VIDEO SIGNAL
CHROMA	Y	CHROMA
REC	Y	REC
PB	Y	PB





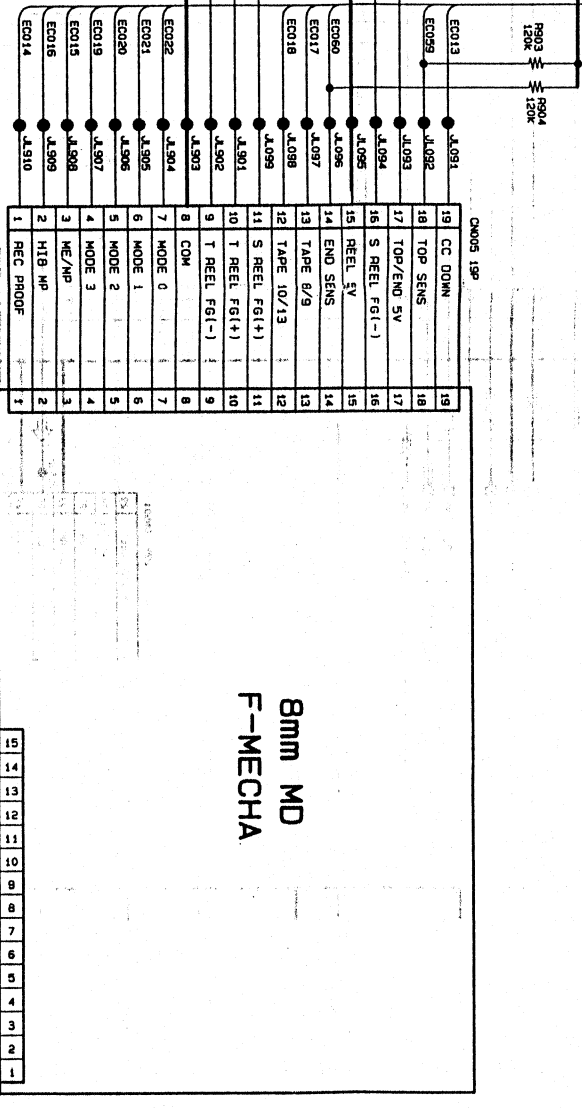
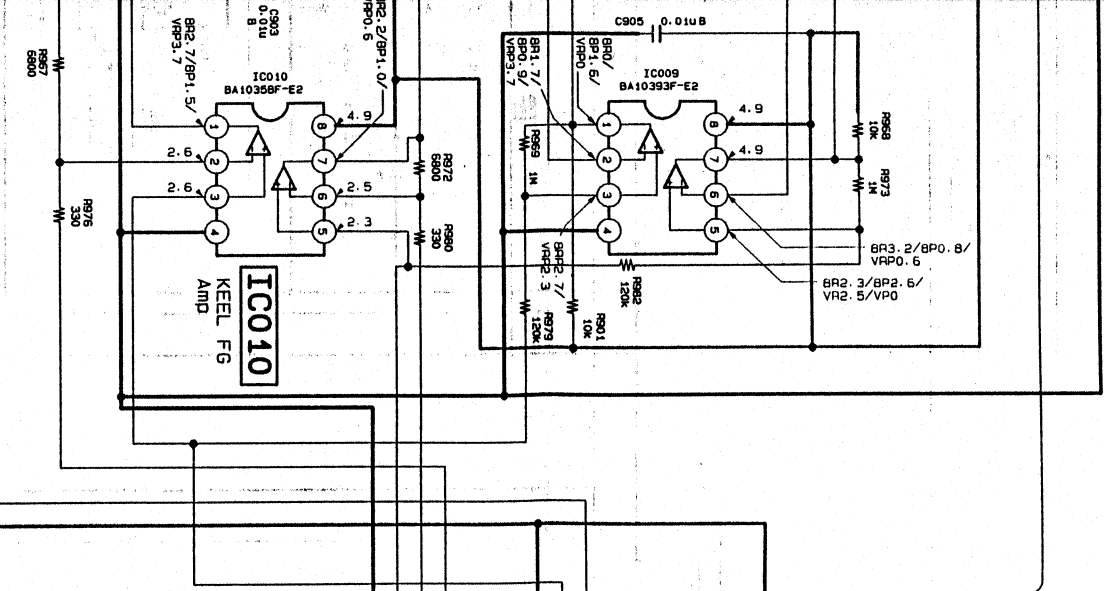




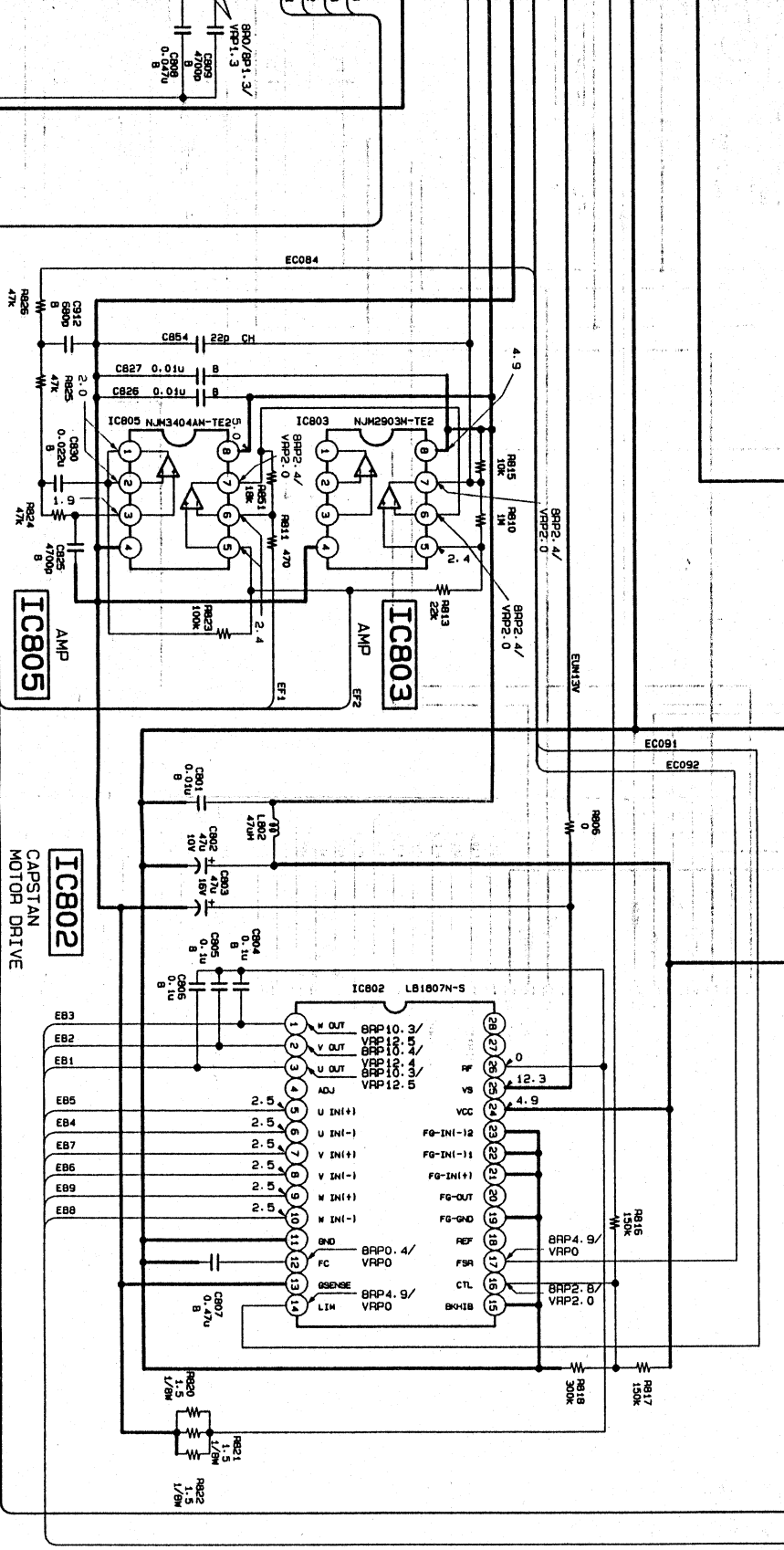
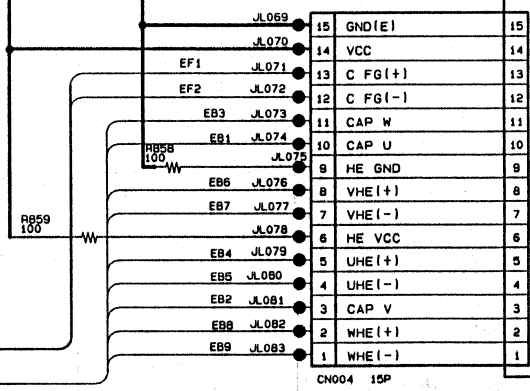
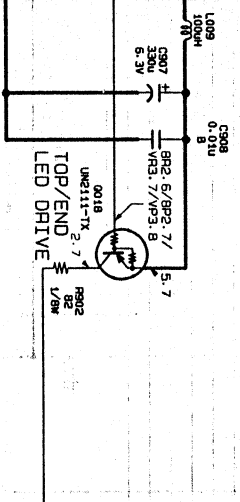


NO MARK: COMMON MODE
VR : VHS REC MODE
VP : VHS PB MODE
8R : 8mm REC MODE
8P : 8mm PB MODE
BRP : 8mm REC/PB MODE
VRP : VHS REC/PB MODE

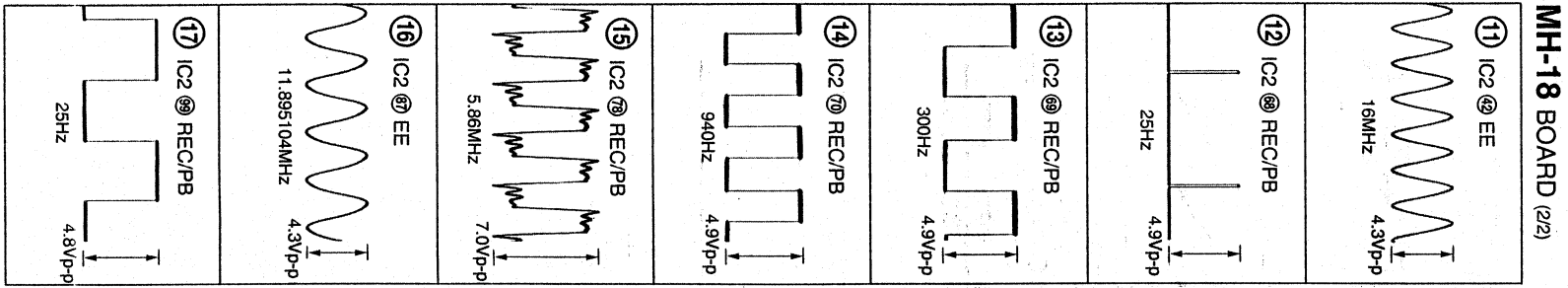
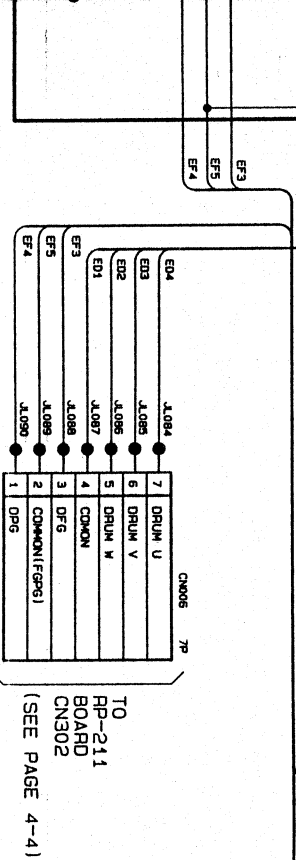
Note:
The components identified by mark **Δ** or dotted line with mark **Δ** are critical for safety.
Replace only with part number specified.

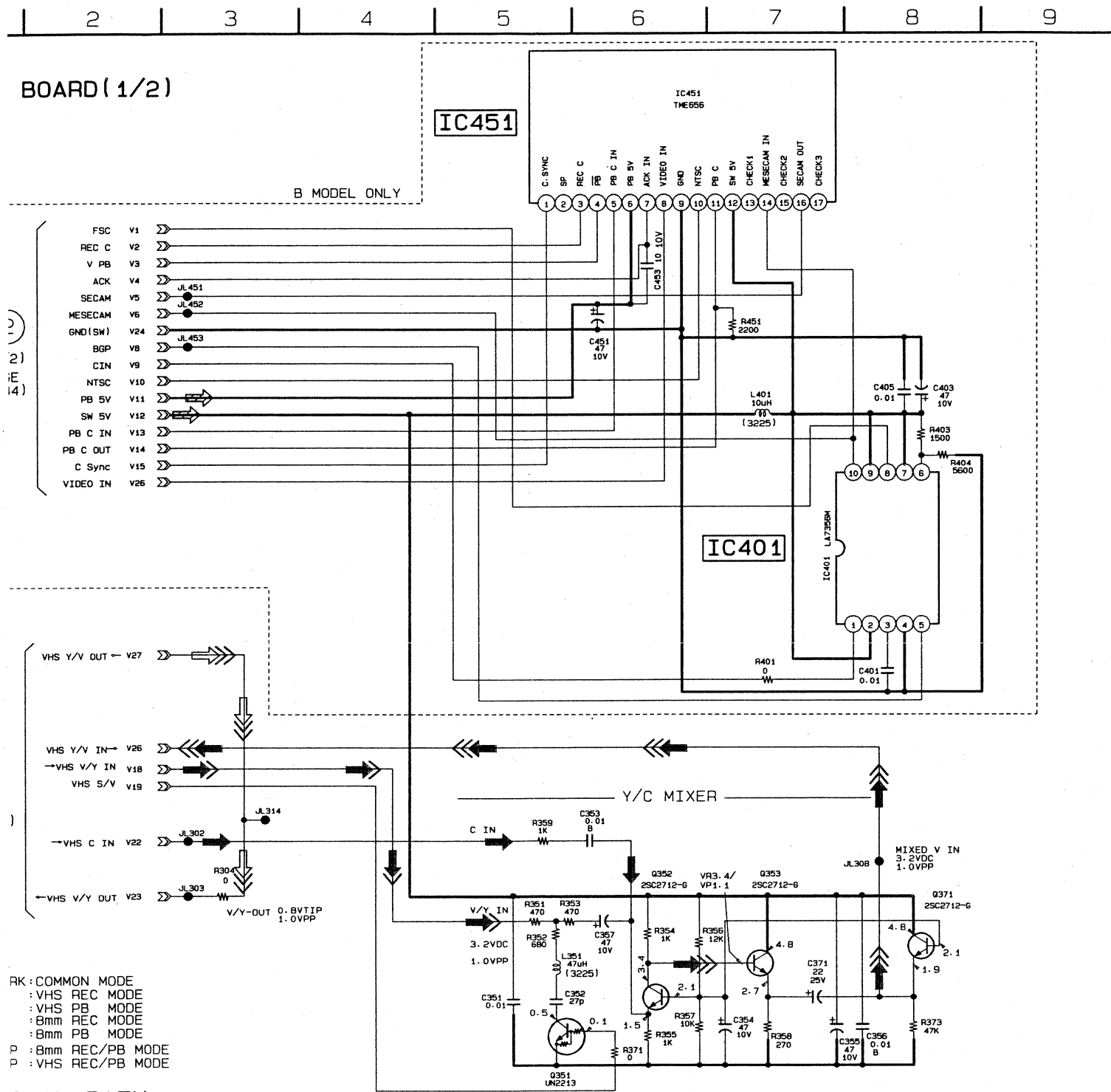


8mm MD
F-MECHA



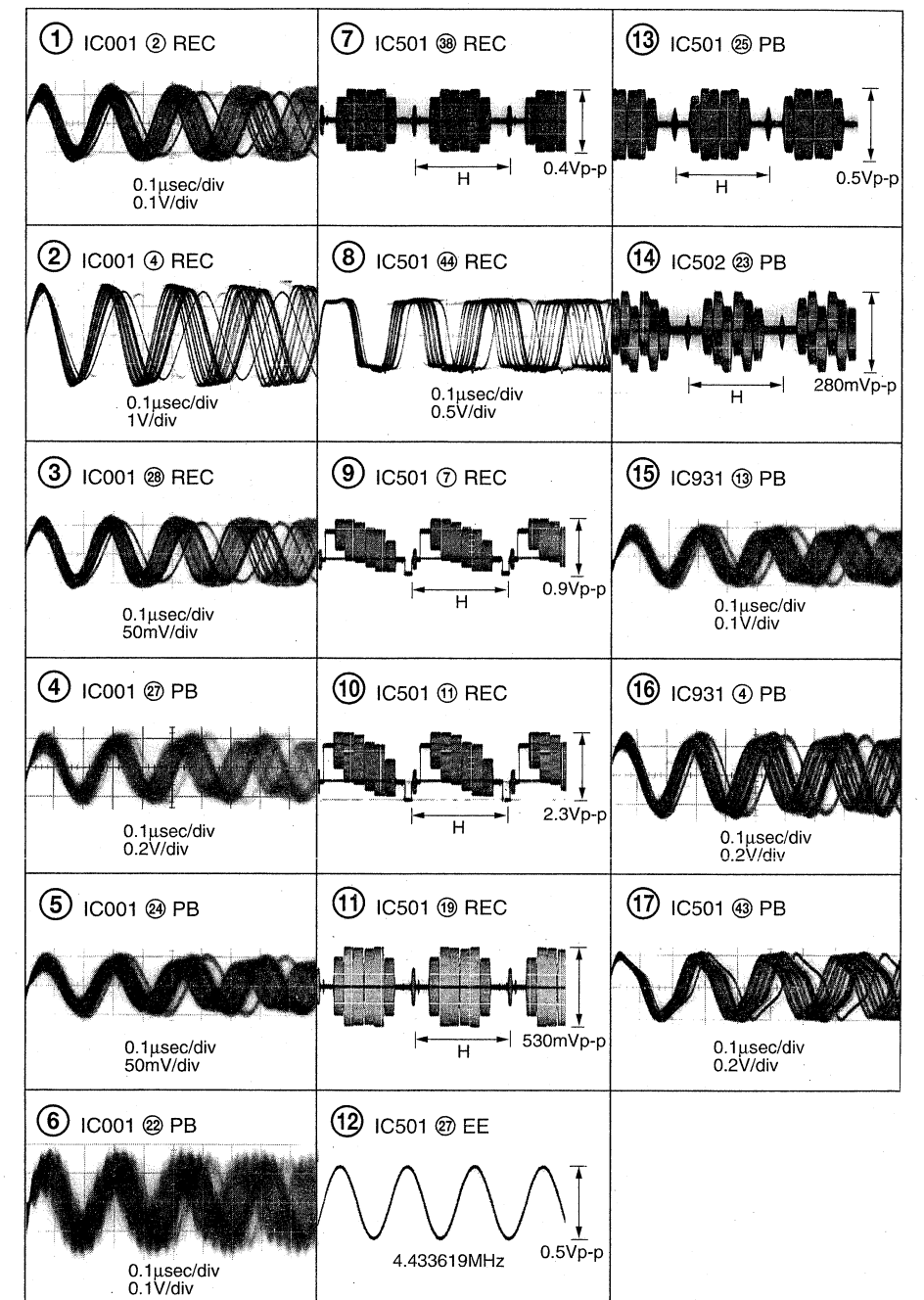
IC802
CAPSTAN
MOTOR DRIVE

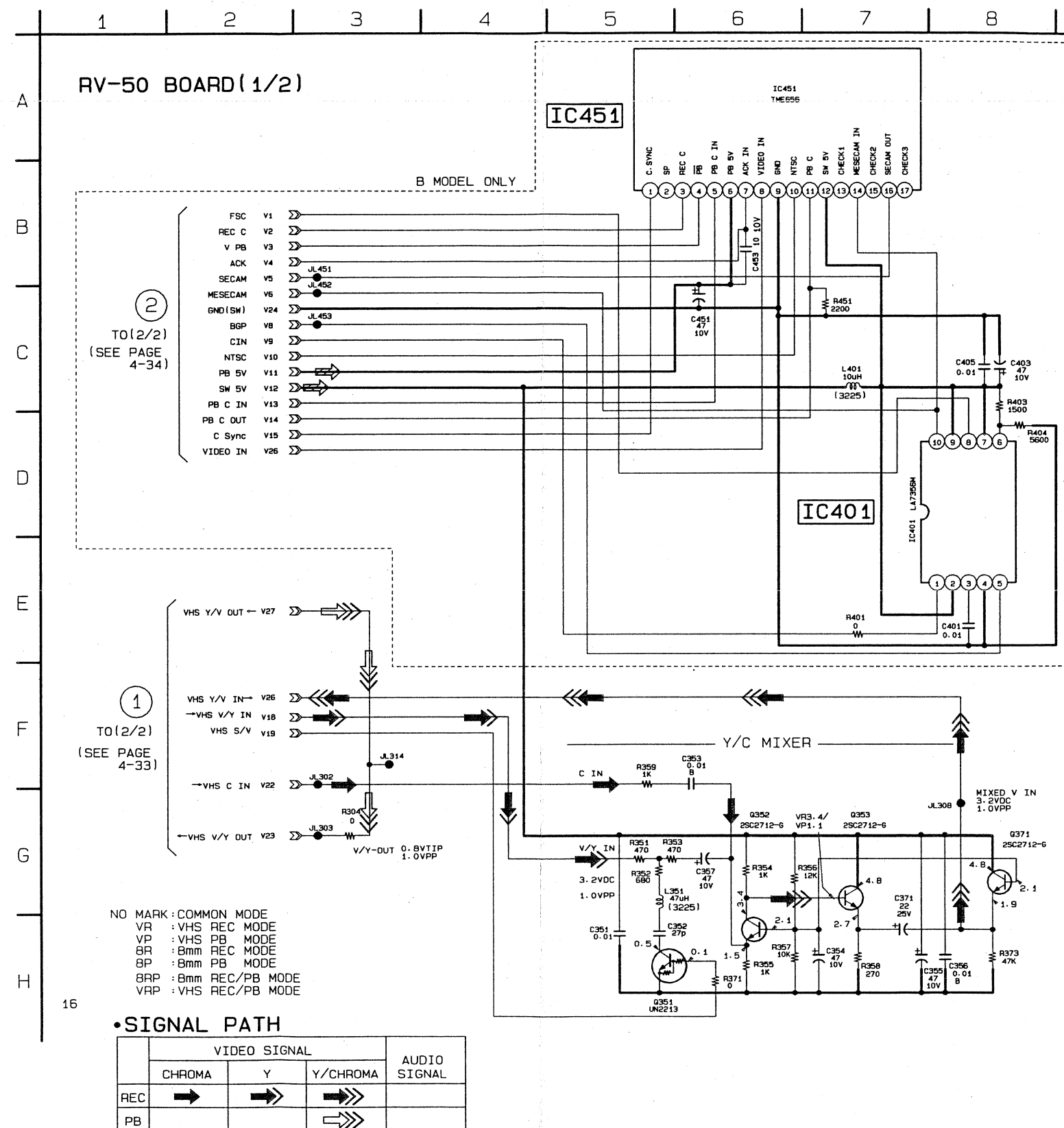




RK: COMMON MODE
 : VHS REC MODE
 : VHS PB MODE
 : Bmm REC MODE
 : Bmm PB MODE
 P : Bmm REC/PB MODE
 P : VHS REC/PB MODE

RV-50 BOARD



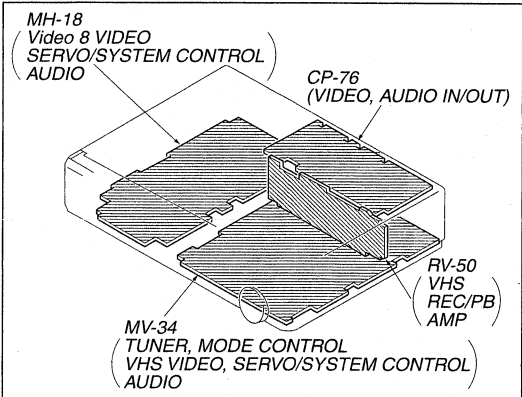


RV-50 (VHS REC/PB AMP) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
— Ref. No. RV-50 Board; 3,000 Series —

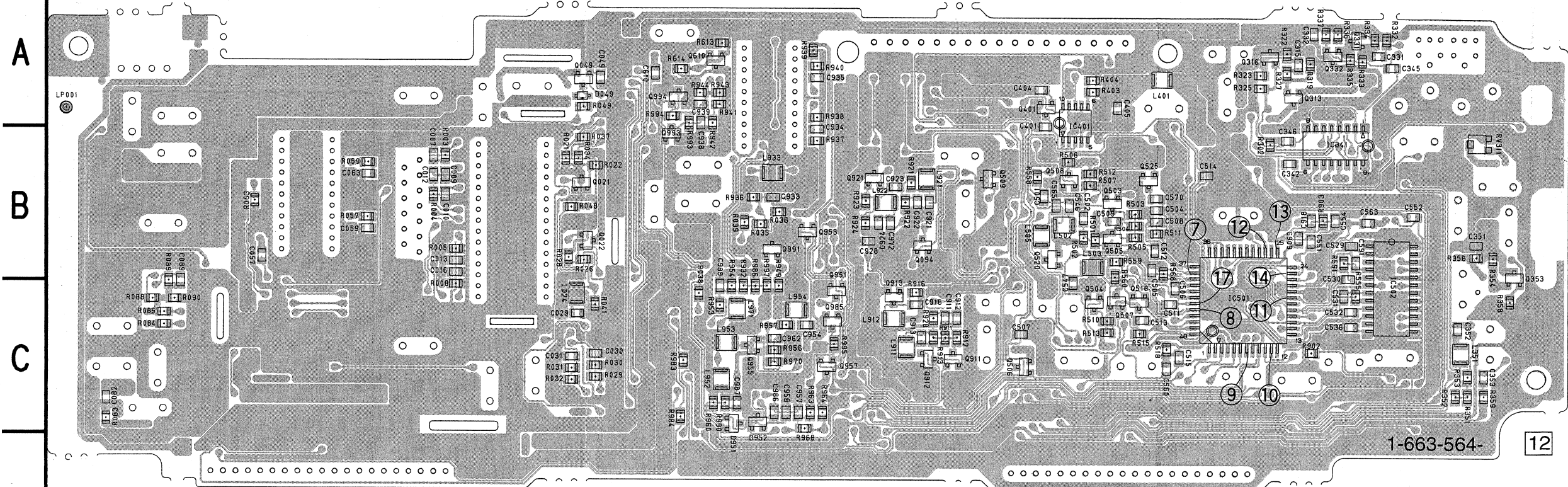
There are few cases that the part printed on this diagram isn't mounted in this model.

RV-50 BOARD

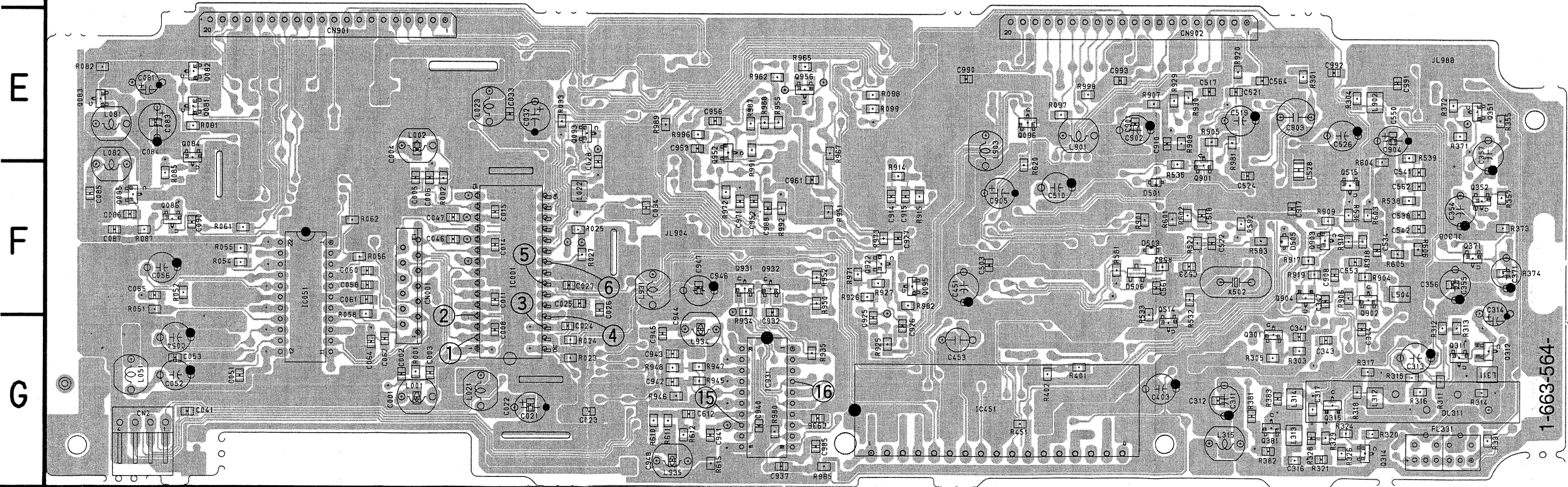
CN001	F-3	Q351	E-10
CN002	G-1	Q352	F-10
CN901	E-2	Q353	C-10
CN902	F-8	Q371	F-10
		Q503	B-7
D501	F-8	Q504	C-7
D503	F-8	Q505	B-7
D505	F-9	Q506	C-7
D506	F-8	Q507	C-7
D951	C-5	Q508	B-7
		Q509	B-7
IC001	F-4	Q514	G-8
IC051	F-2	Q515	F-9
IC401	B-7	Q518	C-8
IC451	G-7	Q520	B-7
IC501	C-8	Q525	B-8
IC502	C-9	Q610	A-5
IC931	G-5	Q901	F-8
		Q912	C-6
Q021	B-4	Q921	B-6
Q022	B-4	Q922	F-6
Q093	E-4	Q932	F-5
Q094	B-6		
Q095	F-6		

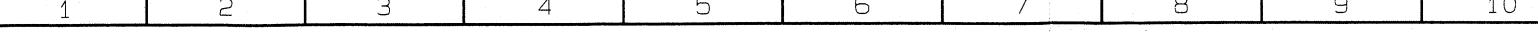


RV-50 BOARD (COMPONENT SIDE)



RV-50 BOARD (CONDUCTOR SIDE)





(JM)

(SEE PAGE 4-16)

(SEE PAGE 4-16)

TABLE 1

(SEE PAGE 4 10)

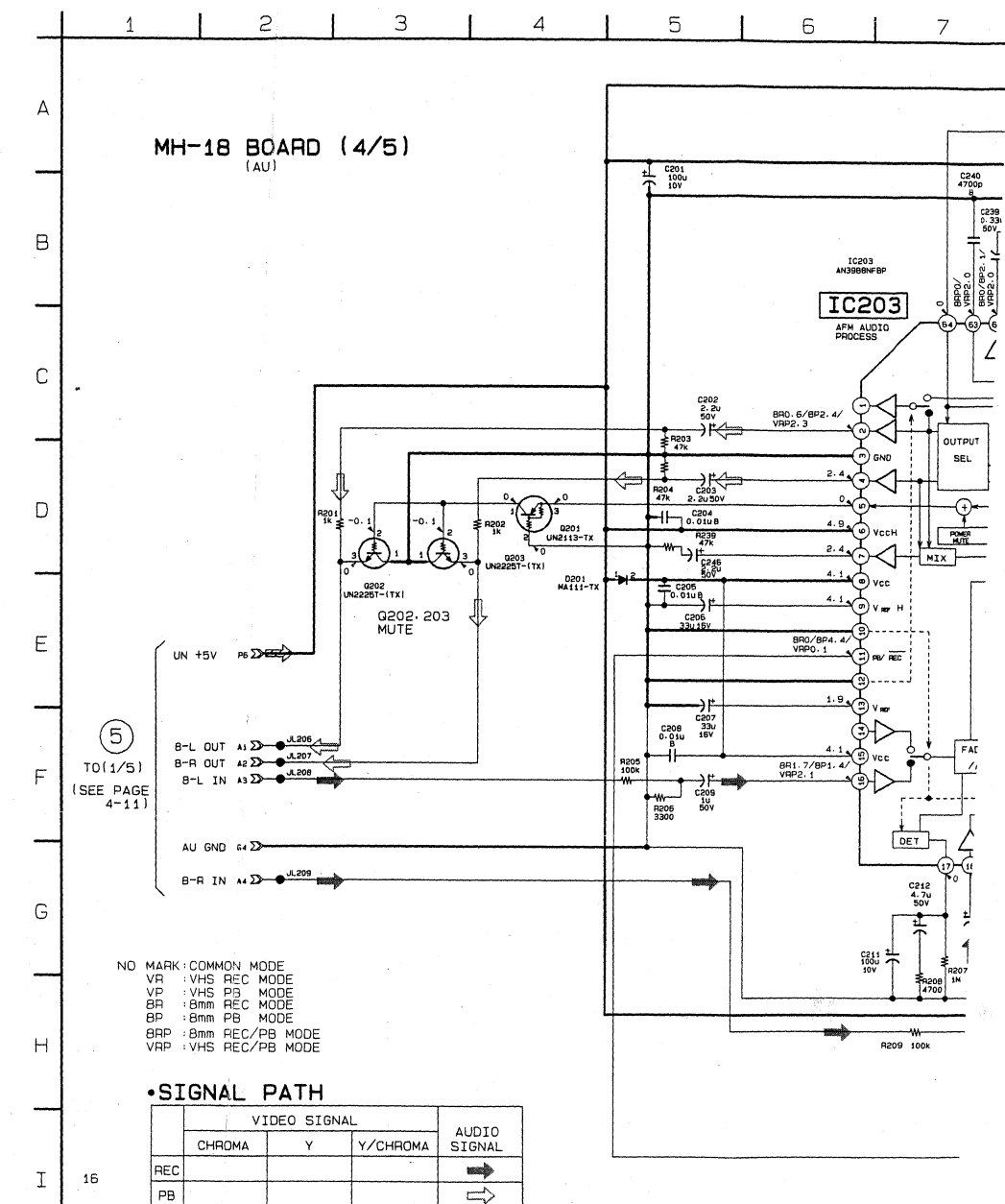
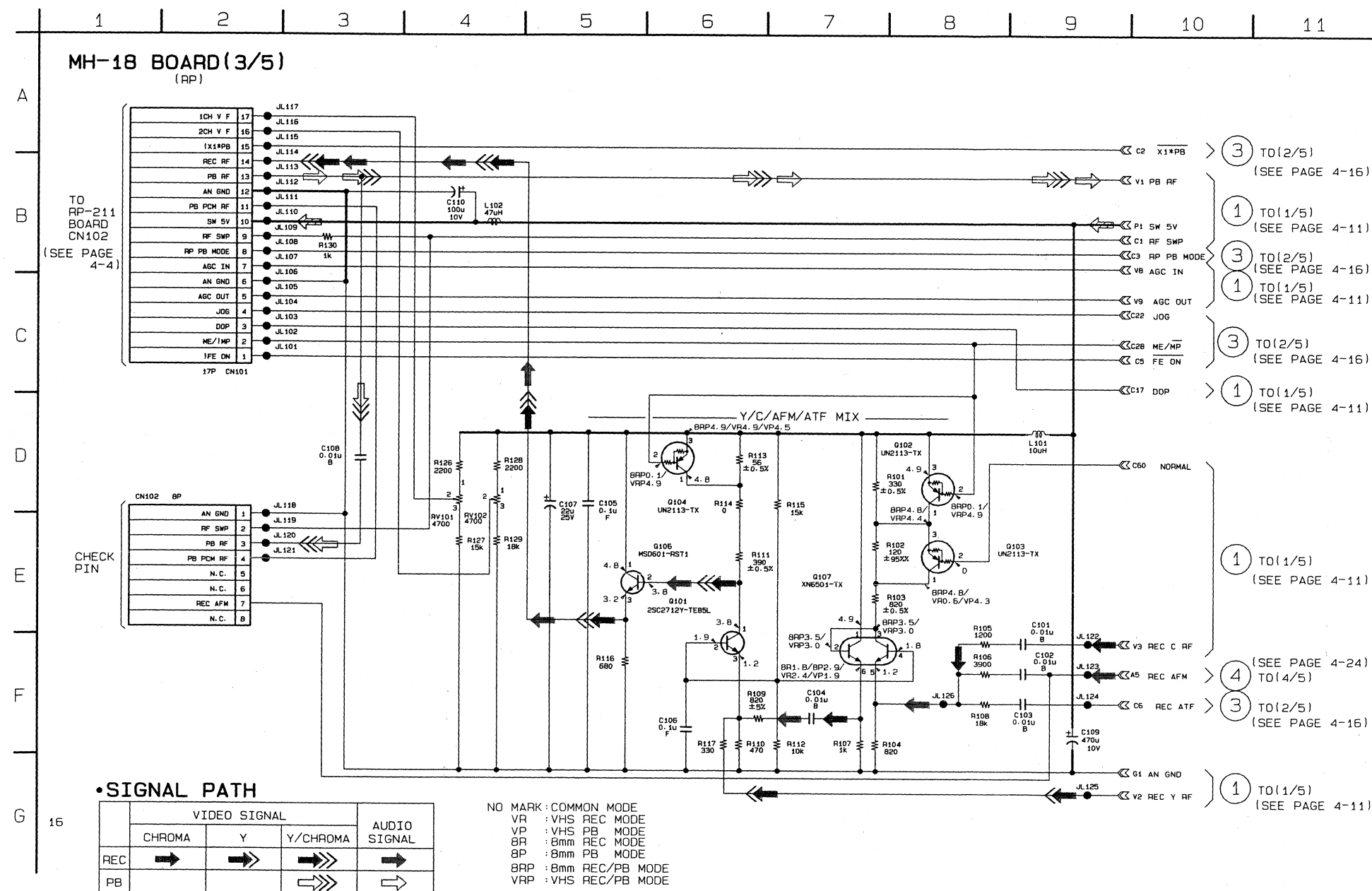
(SEE PAGE 4-11)

- SIGNAL PATH

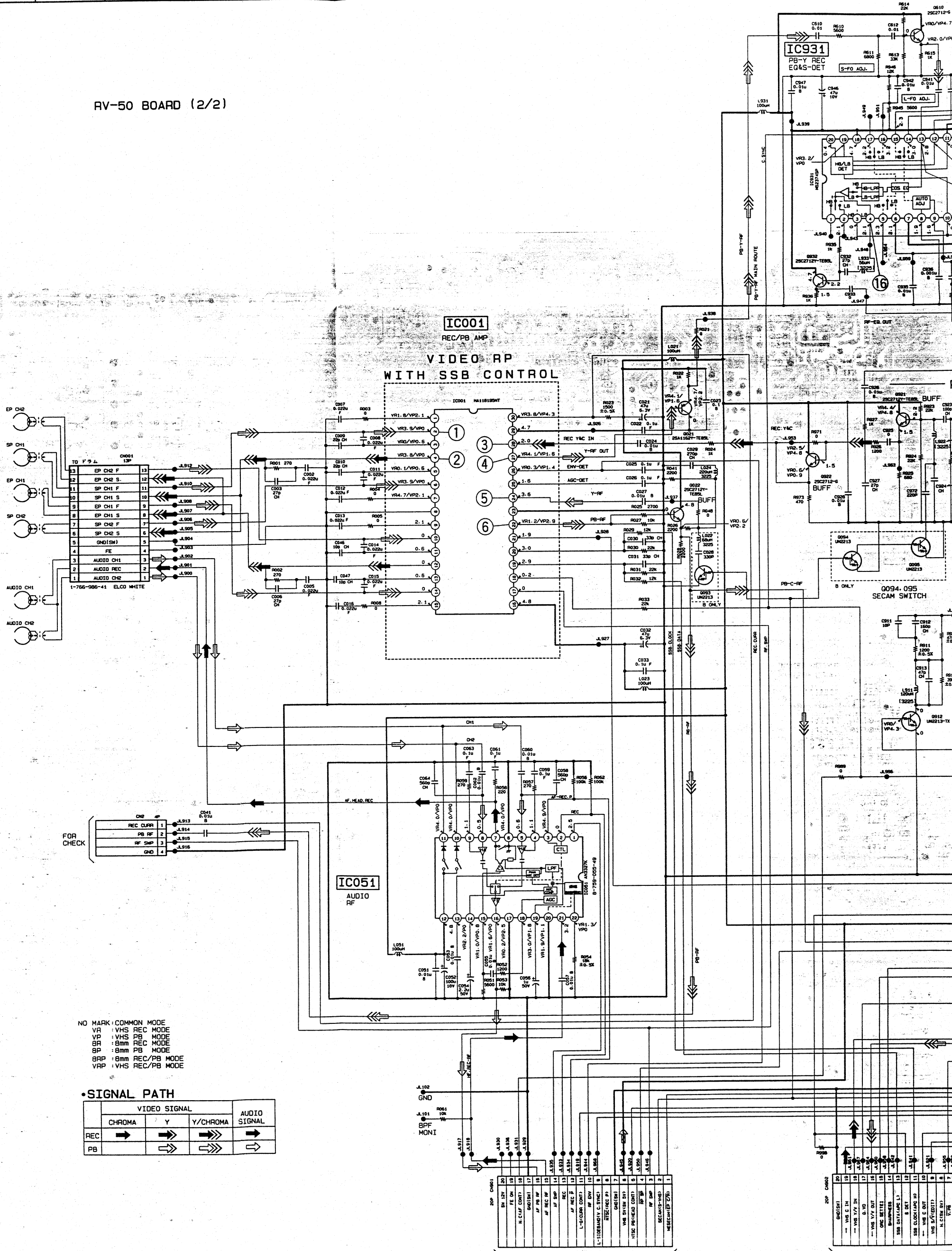
16

— Ref. No. MH-18 Board; 2,000 Series —

- See page 4-6 for MH-18 BOARD printed wiring board.



RV-50 BOARD (2/2)



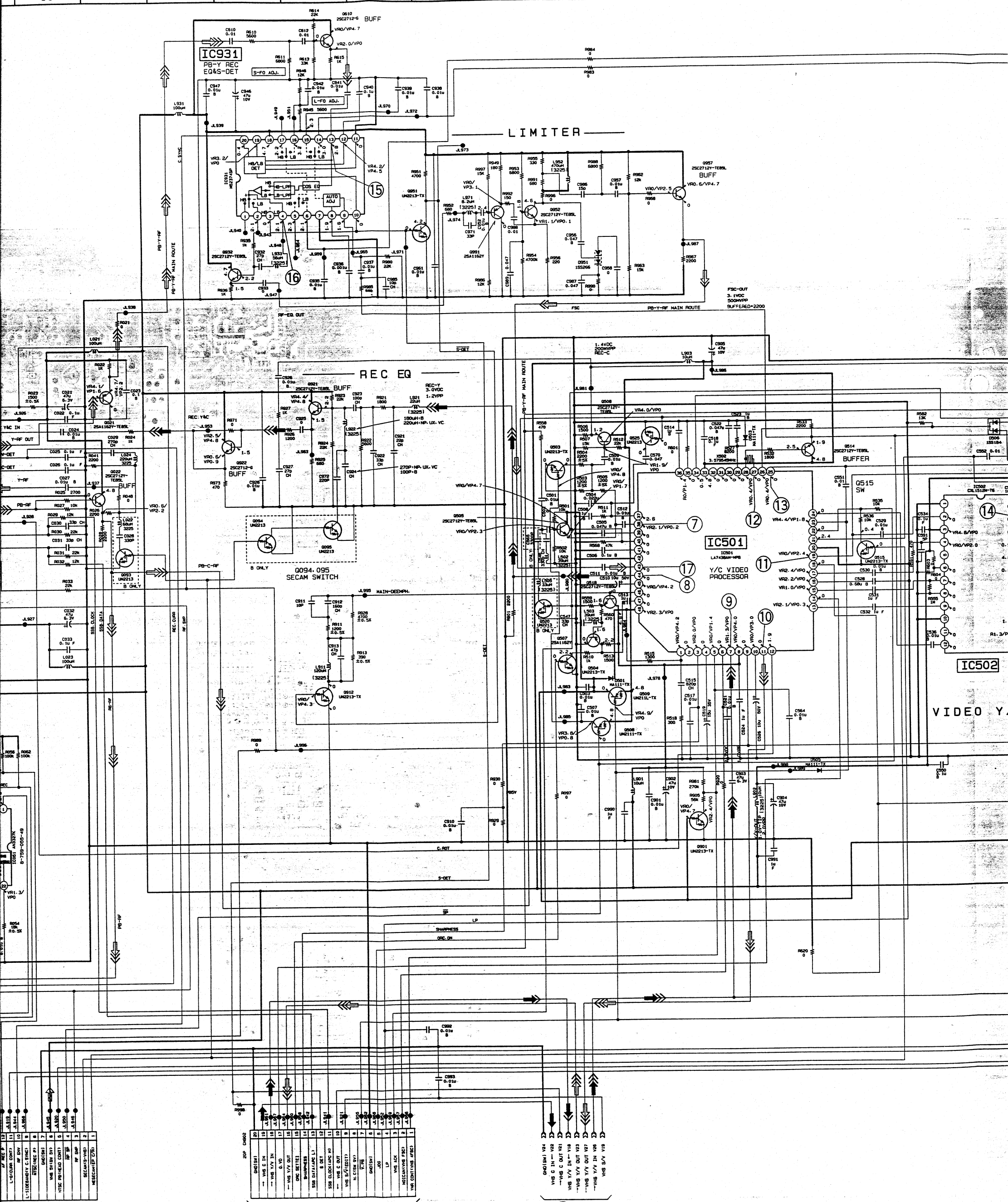
NO MARK: COMMON MODE
VR : VHS REC MODE
VP : VHS PB MODE
BR : 8mm REC MODE
BP : 8mm PB MODE
BRP : 8mm REC/PB MODE
VRP : VHS REC/PB MODE

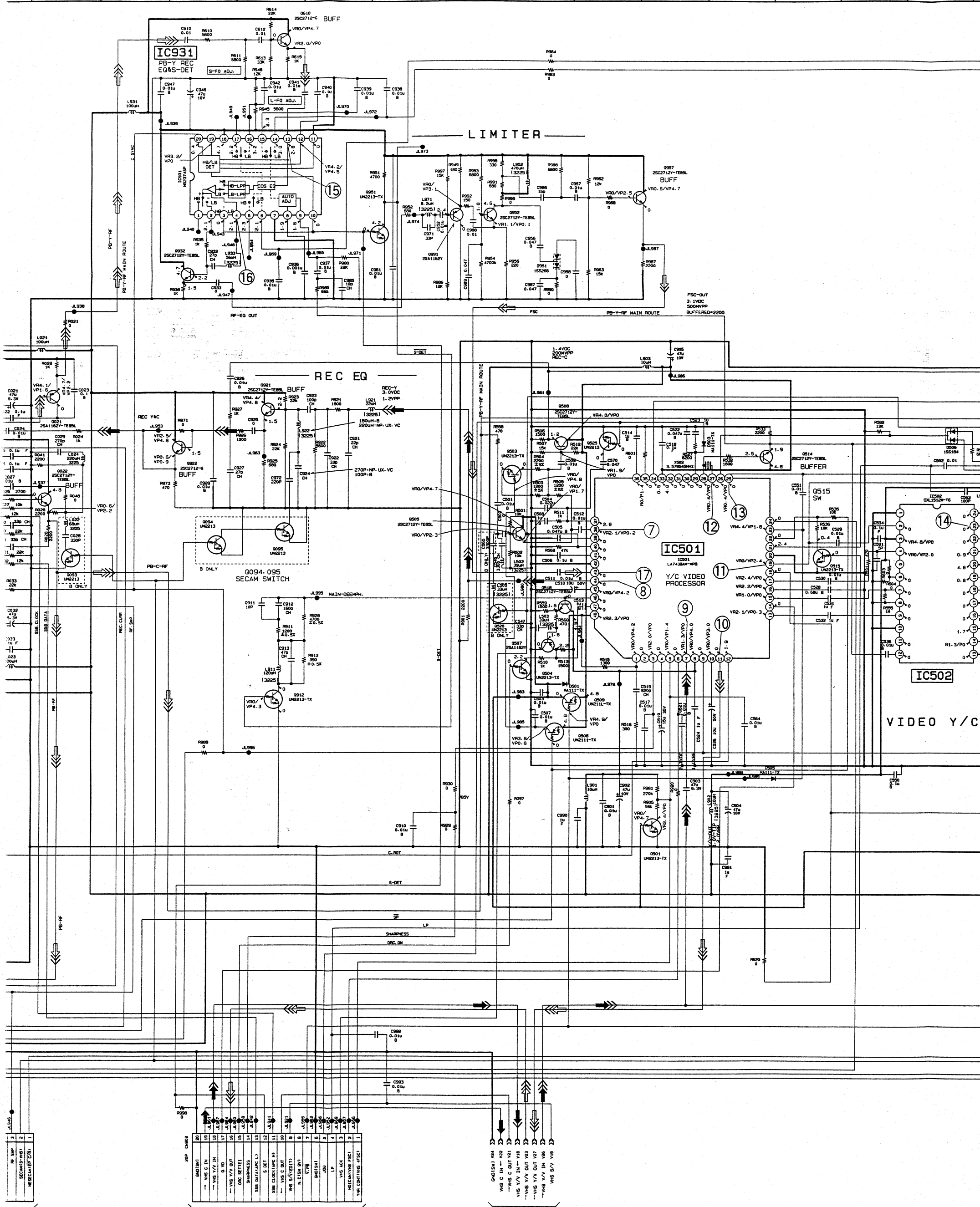
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→	→
PB	→	→	→	→

TO
MV-34 BOARD
CN301
(SEE PAGE 4-51)

TO
MV-34 BOARD
CN302
(SEE PAGE 4-4)

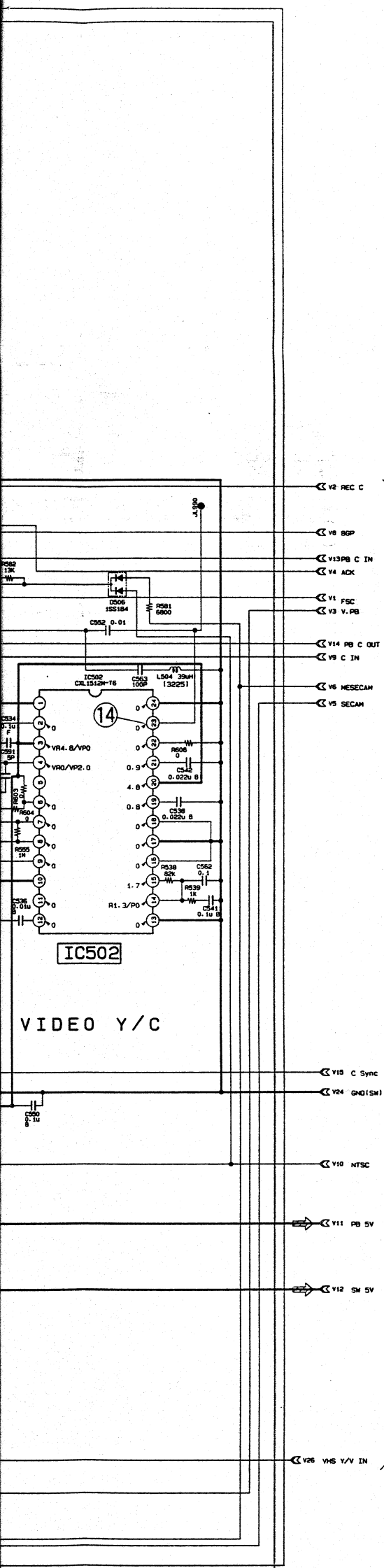




TO
MV-34 BOARD
CN302
(SEE PAGE 4-41)

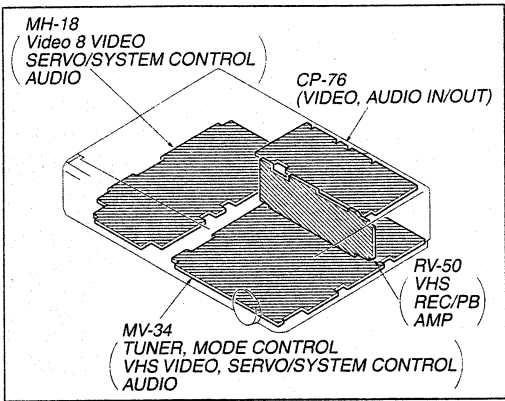
1 TO(1/2)
(SEE PAGE 4-28)

24 25 26 26



MV-34 (TUNER, MODE CONTROL, VHS VIDEO, SERVO/SYSTEM CONTROL, AUDIO) PRINTED WIRING BOARD
— Ref. No. MV-34 Board; 4,000 Series —

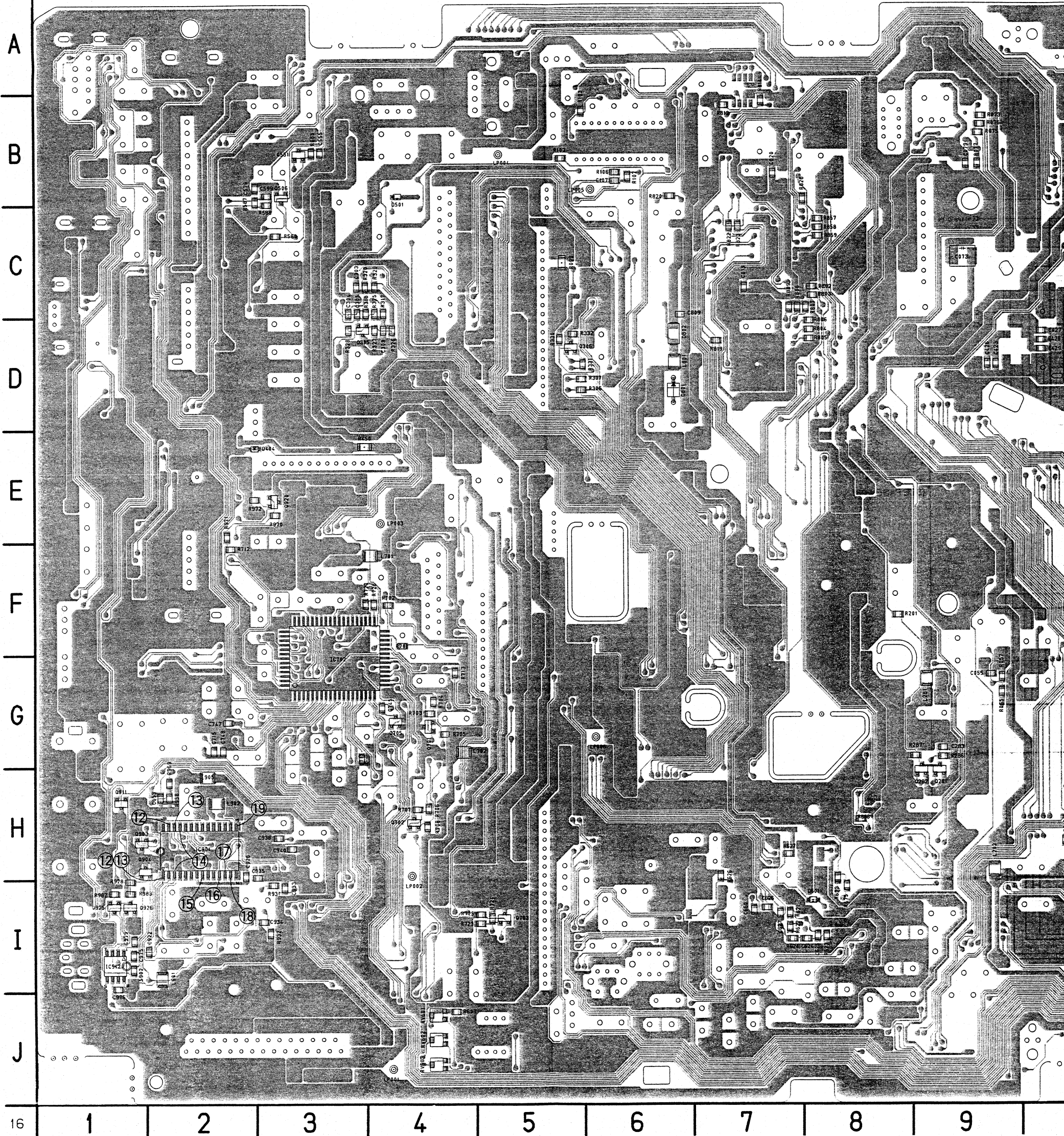
There are few cases that the part printed on this diagram isn't mounted.



MV-34 BOARD

CN002	B-19	CN707	F-23	D512	D-24	IC401	B-22	PH261	F-15	Q502	B-26	Q601	I-20	Q901	I-25
CN003	B-16	CN708	C-23	D513	C-25	IC407	B-23	PH262	D-15	Q505	A-25	Q602	H-20	Q902	I-26
CN004	B-15			D601	I-8	IC601	I-19			Q506	B-3	Q651	J-22	Q903	H-1
CN006	E-22	D001	B-17	D701	E-25	IC602	I-21	Q004	B-18	Q507	A-25	Q652	H-22	Q904	H-1
CN101	A-22	D010	H-17	D801	D-6	IC701	D-24	Q005	B-18	Q509	A-25	Q653	H-21	Q905	I-26
CN102	B-22	D051	G-17	D802	D-6	IC702	G-3	Q007	B-18	Q512	D-25	Q654	H-21	Q911	H-1
CN301	I-22	D071	C-19	D901	I-26	IC705	E-22	Q254	J-18	Q513	B-26	Q655	H-21	Q913	H-25
CN302	C-22	D203	H-18	D903	I-26	IC706	G-25	Q261	A-18	Q515	C-25	Q701	G-4	Q915	H-26
CN400	E-24	D205	I-16	D905	H-26	IC801	C-20	Q262	J-17	Q516	C-25	Q702	H-4	Q920	E-3
CN401	I-14	D261	F-17			IC802	A-20	Q263	E-15	Q517	B-25	Q703	I-5	Q921	D-26
CN403	A-17	D265	F-15	IC051	G-18	IC901	H-2	Q301	C-21	Q518	B-24	Q704	F-24	Q922	D-26
CN404	F-14	D267	D-12	IC071	C-18	IC902	H-24	Q302	C-21	Q520	B-26	Q705	G-4	Q924	D-26
CN601	J-22	D403	B-15	IC101	B-21	IC912	I-1	Q303	D-21	Q521	B-24	Q706	F-24	Q925	I-1
CN602	J-22	D405	E-16	IC201	I-17			Q304	D-21	Q522	B-23	Q707	E-25	Q926	I-1
CN702	J-24	D501	B-4	IC271	E-18	J901	H-26	Q305	D-3	Q523	C-24	Q801	D-23	Q927	D-26
CN705	F-22	D502	B-23	IC301	C-23	J902	I-26	Q306	D-5	Q552	B-25	Q802	D-23	Q928	D-26
														Q929	D-26

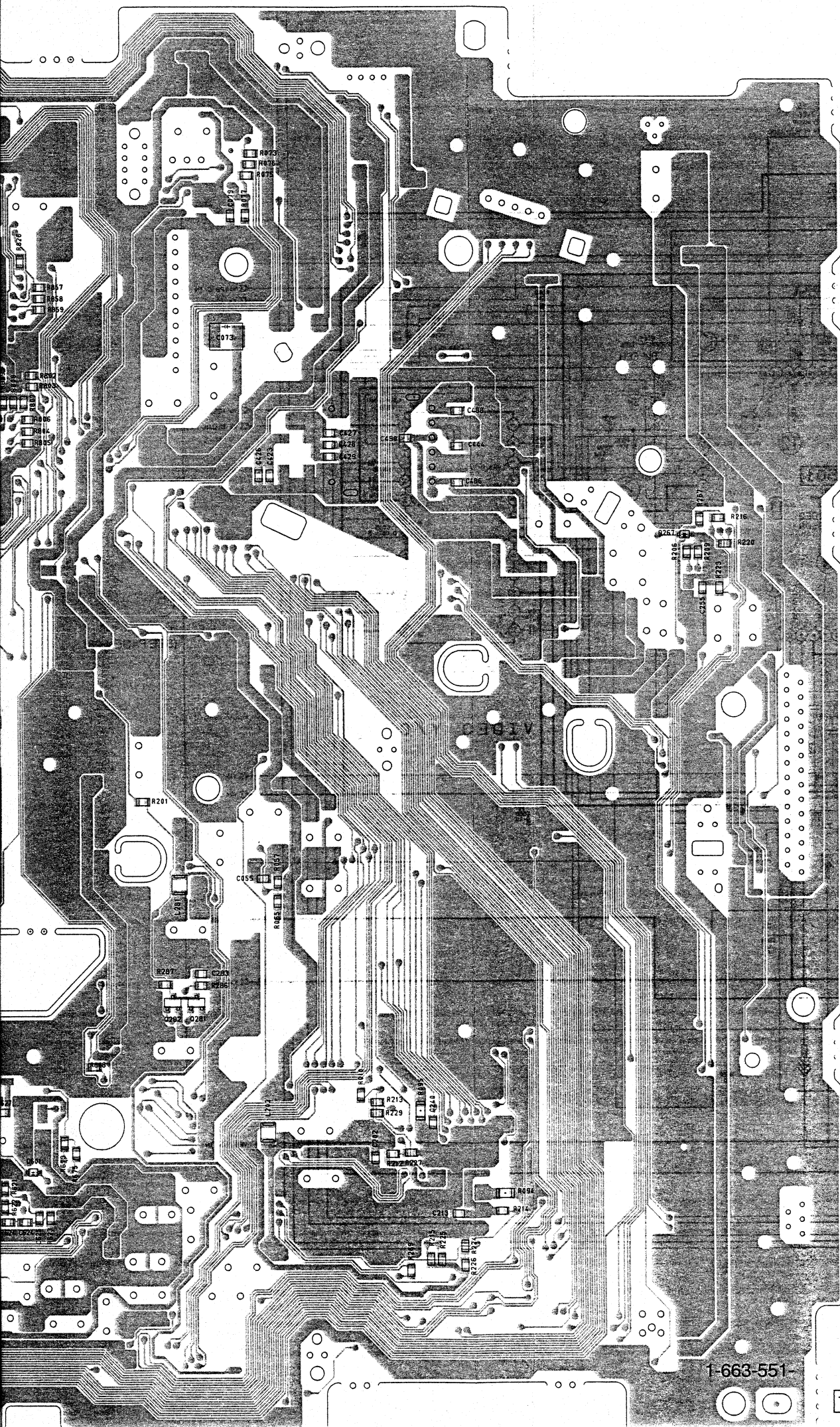
MV-34 BOARD (COMPONENT SIDE)



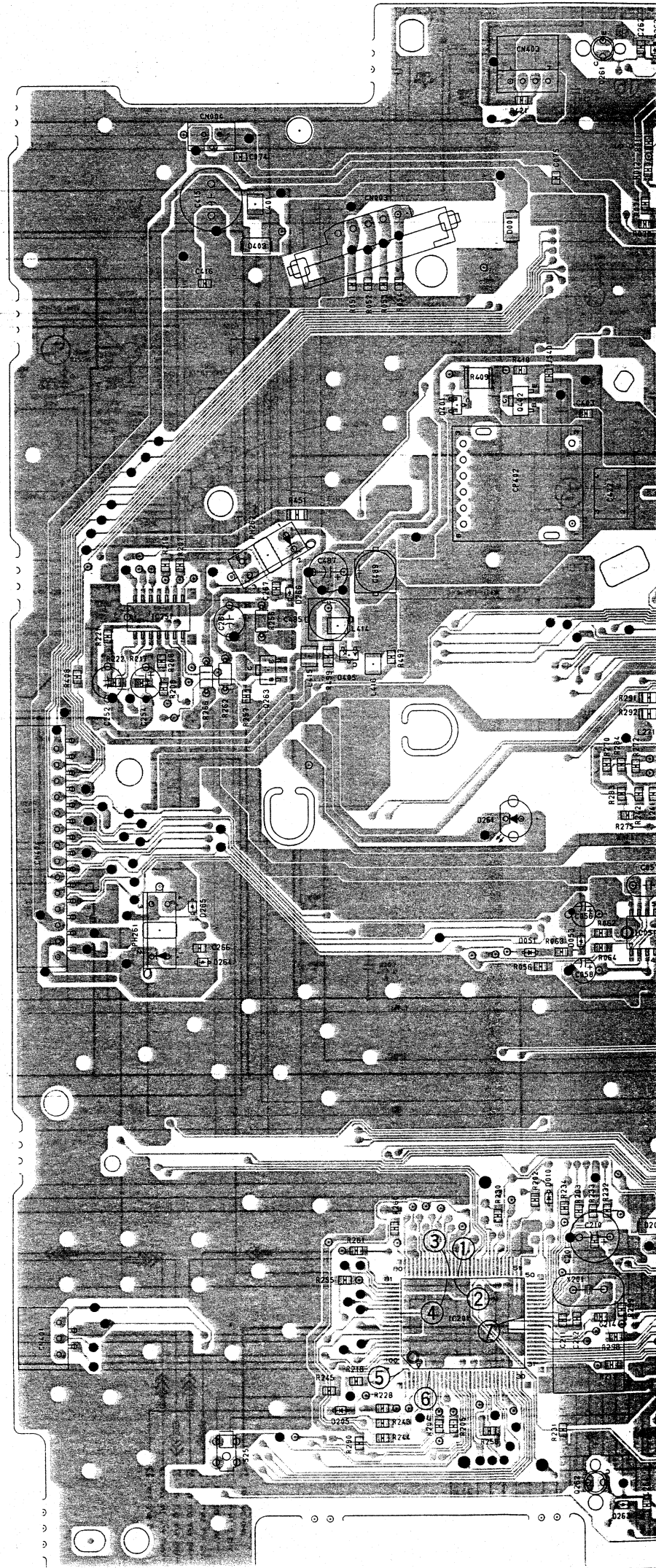
cases that the part printed on this diagram isn't mounted in this model.

Q601	I-20	Q901	I-25
Q602	H-20	Q902	I-26
Q651	J-22	Q903	H-1
Q652	H-22	Q904	H-1
Q653	H-21	Q905	I-26
Q654	H-21	Q911	H-1
Q655	H-21	Q913	H-25
Q701	G-4	Q915	H-26
Q702	H-4	Q920	E-3
Q703	I-5	Q921	D-26
Q704	F-24	Q922	D-26
Q705	G-4	Q924	D-26
Q706	F-24	Q925	I-1
Q707	E-25	Q926	I-1
Q801	D-23	Q927	D-26
Q802	D-23	Q928	D-26
		Q929	D-26

MV-34 BOARD (CONDUCTOR SIDE)



11



8

9

10

11

12

13

14

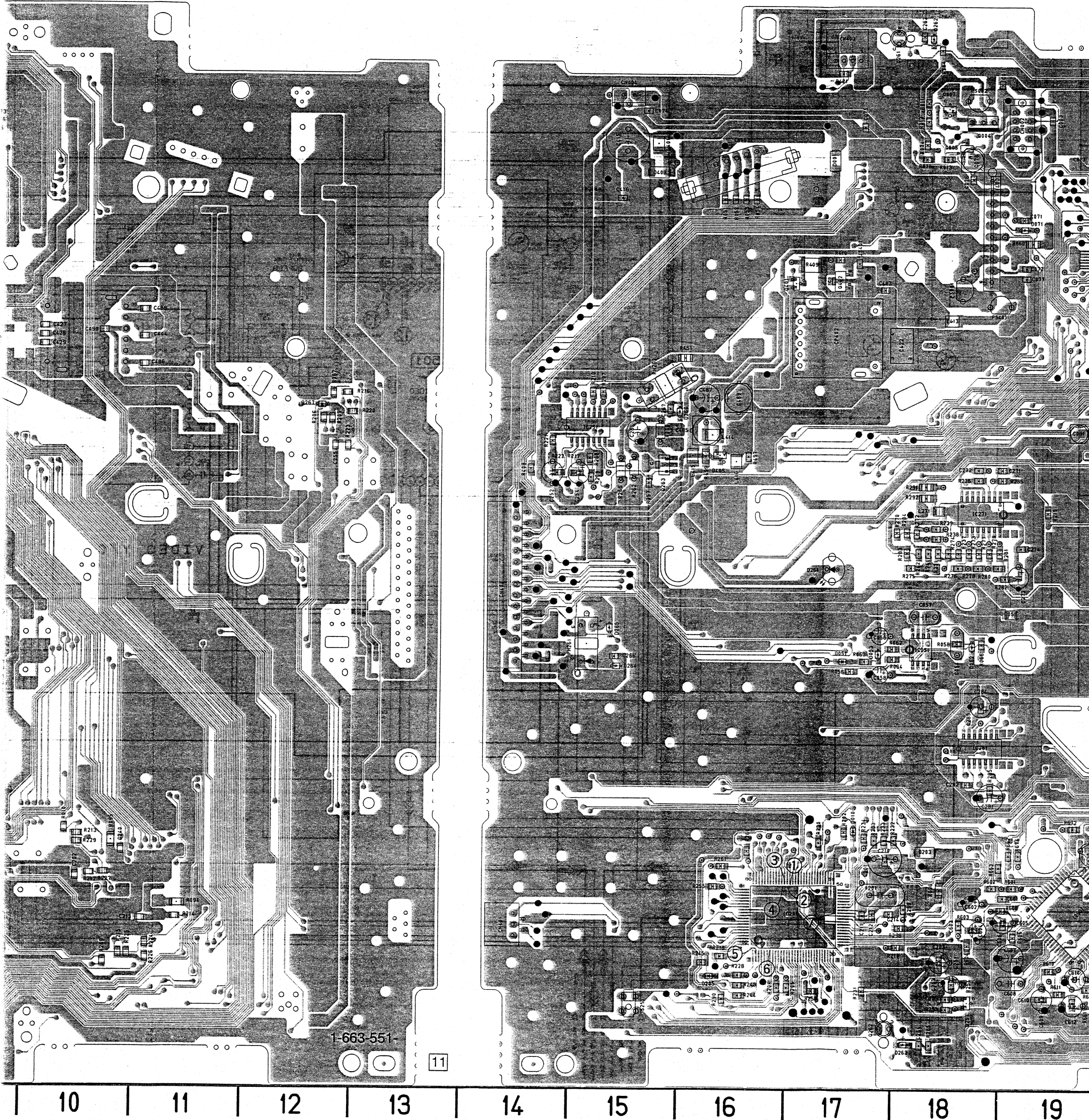
15

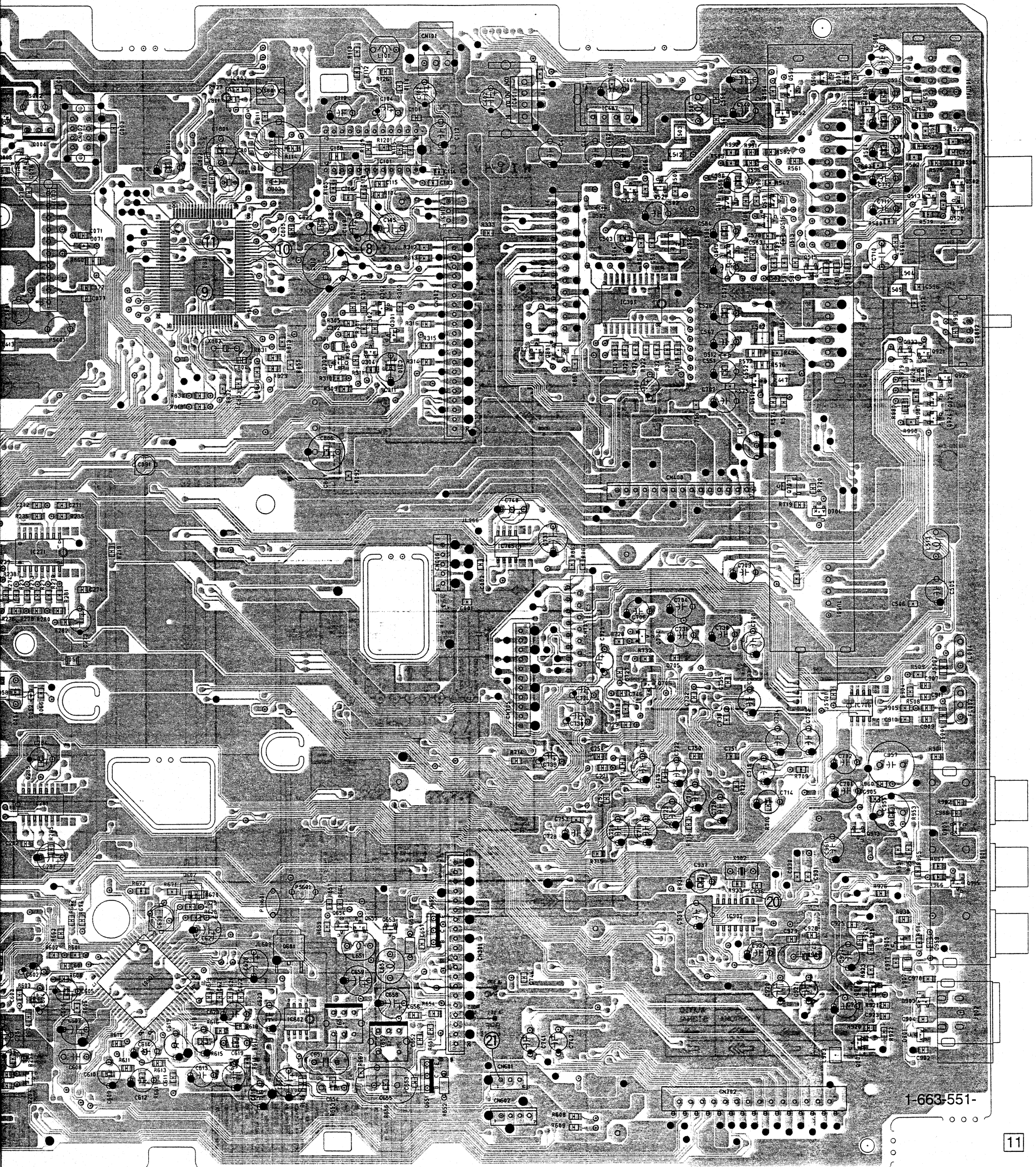
16

17

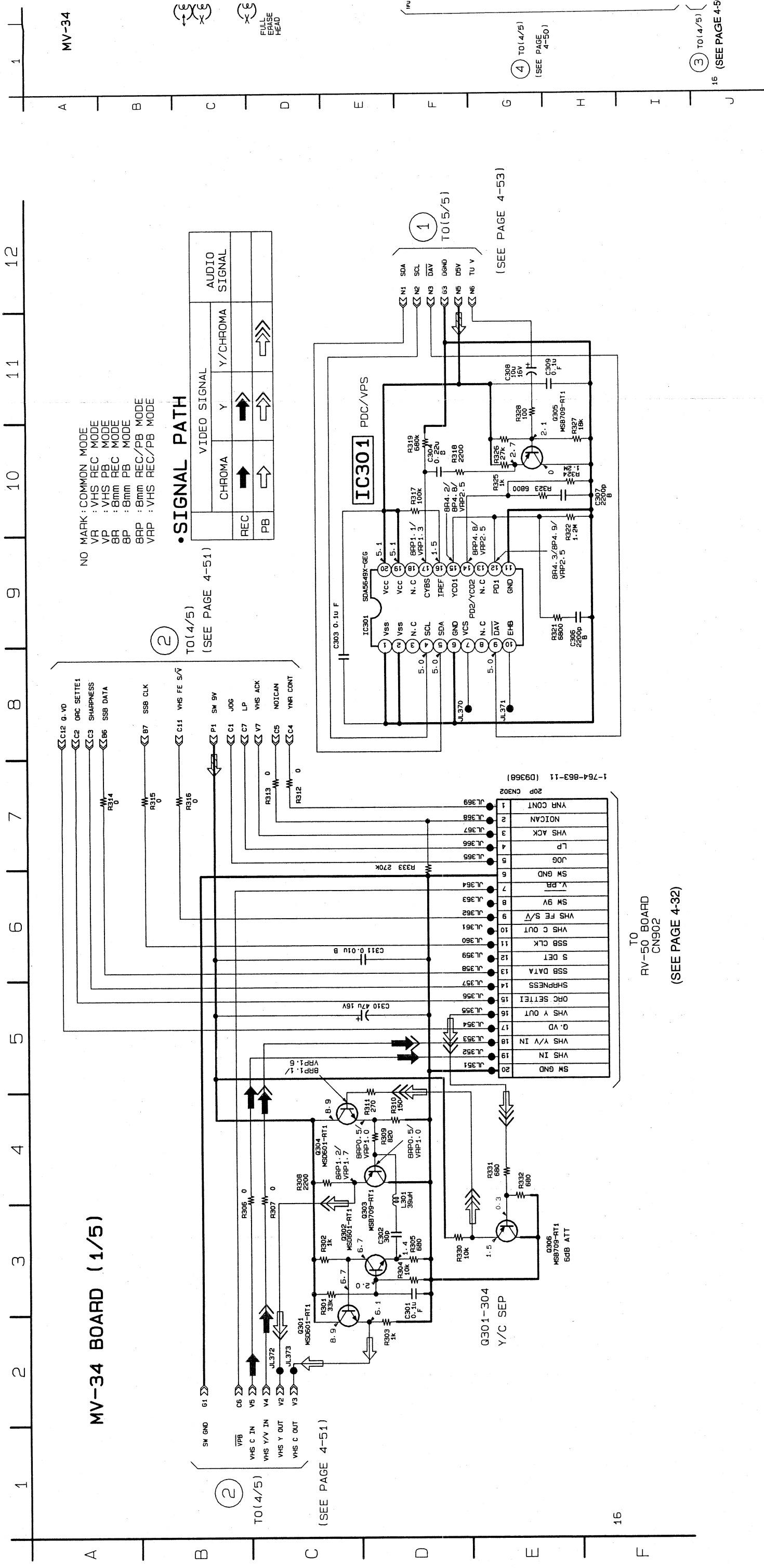
m isn't mounted in this model.

MV-34 BOARD (CONDUCTOR SIDE)





11



MV-34 BOARD (3/3)

②1 CN601 ① REC



12

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

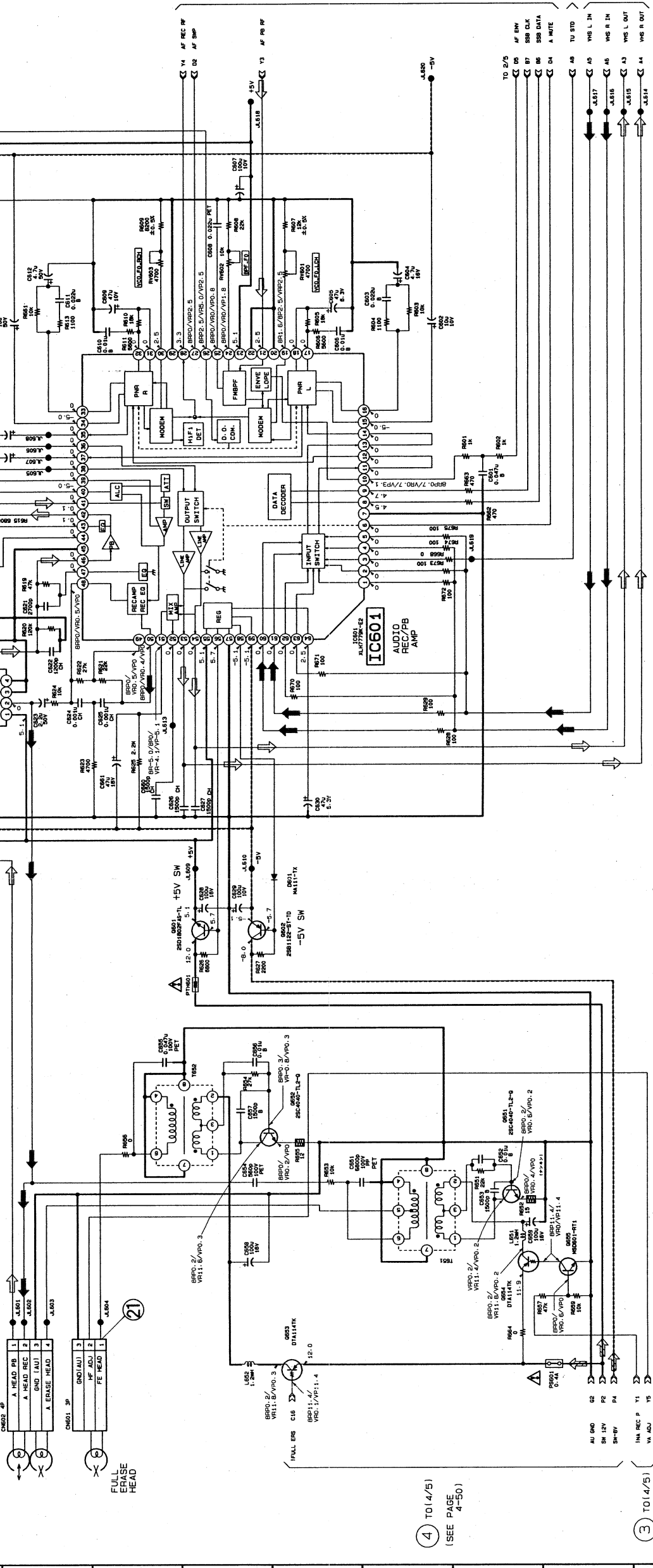
MV-34 BOARD (2/5)

• SIGNAL PATH

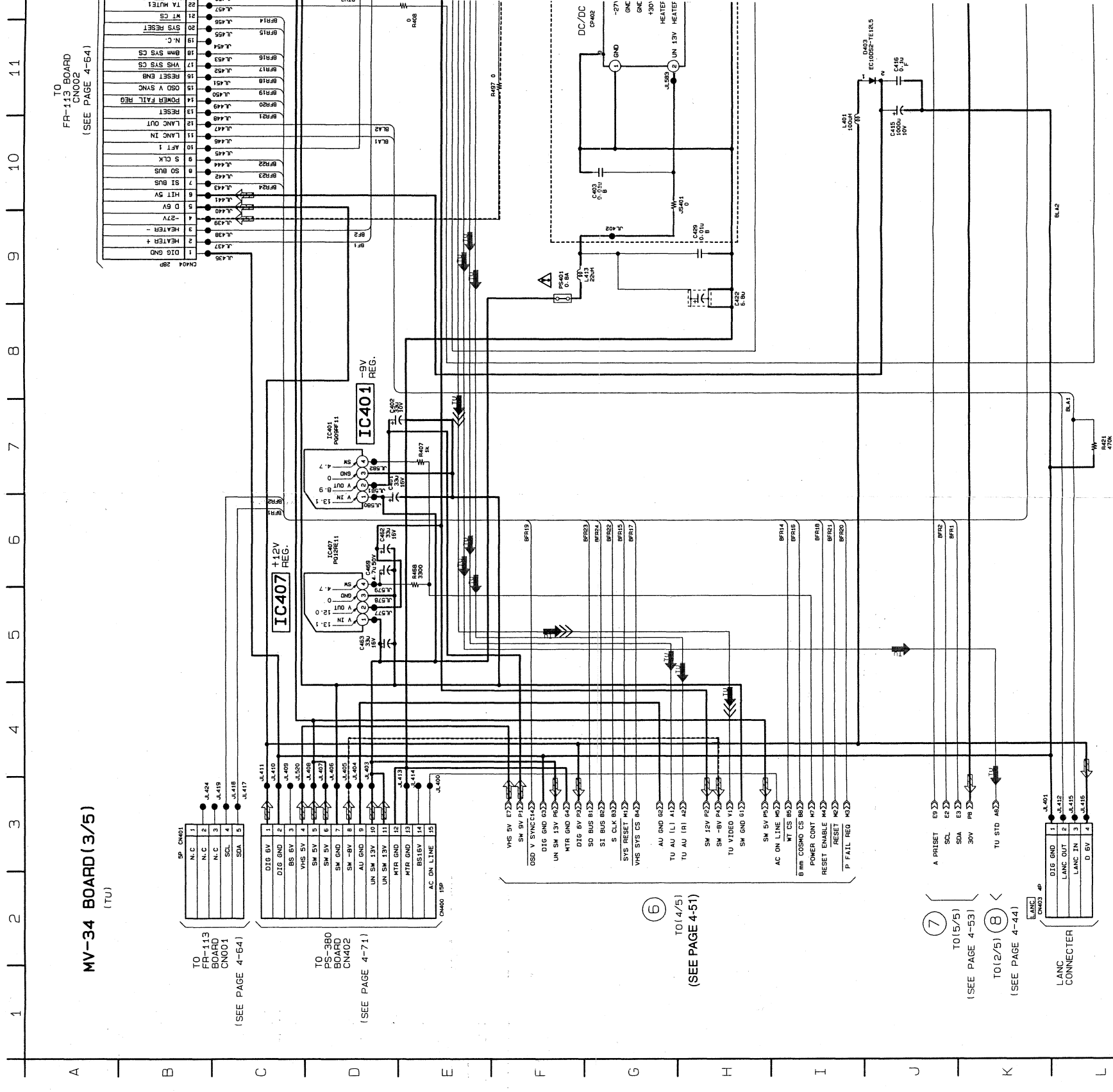
VIDEO SIGNAL		AUDIO SIGNAL	
REC	CHROMA	Y	Y/CHROMA
PB			

Note:
The components identified by mark **A** or dotted line with mark **A** are critical for safety.
Replace only with part number specified.

NO MARK: COMMON MODE
VR : VHS REC MODE
BP : VHS REC MODE
SP : 8mm PB MODE
BRP : 8mm REC/PB MODE
VRP : VHS REC/PB MODE



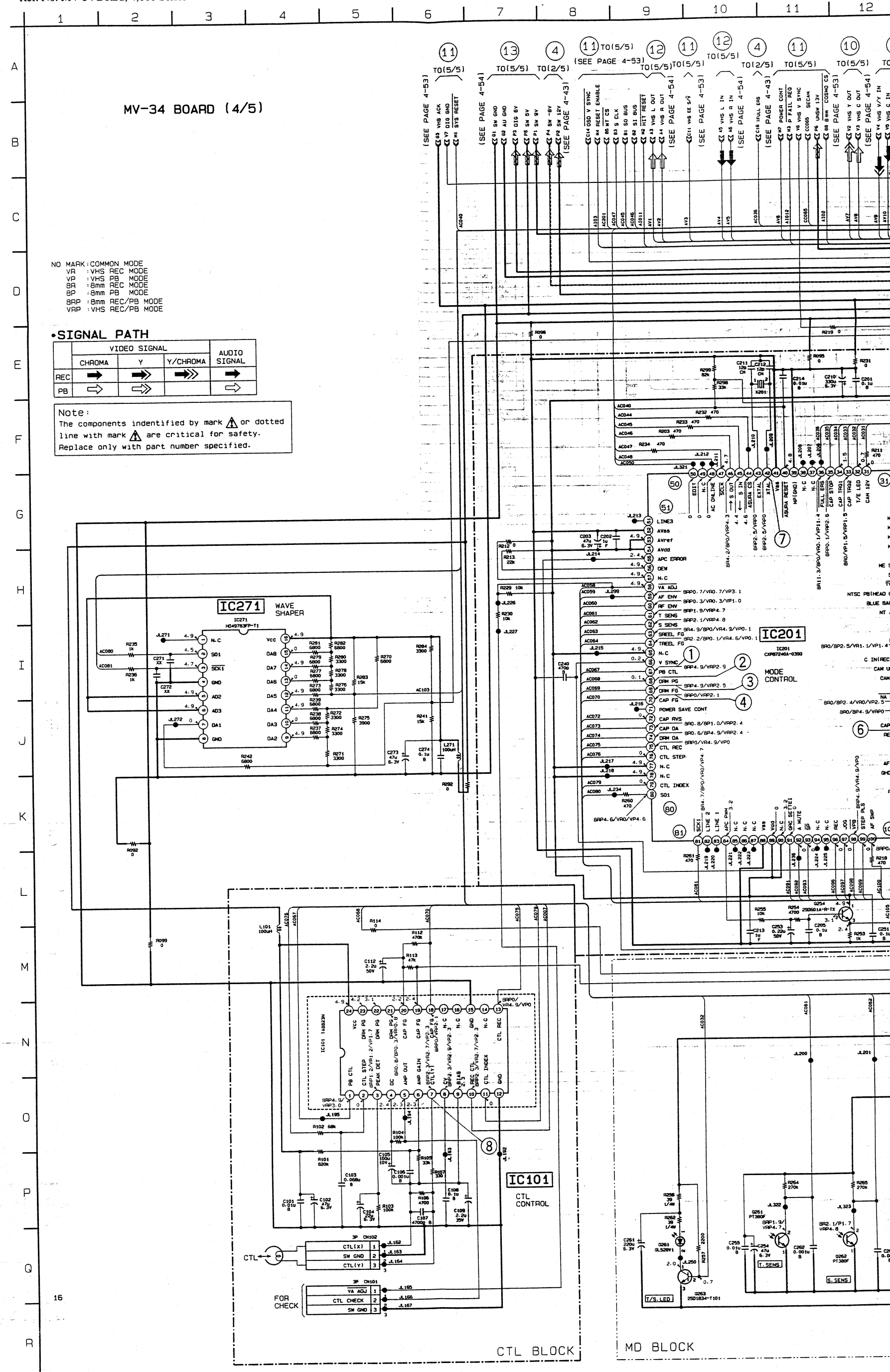
MV-34 (TUNER) SCHEMATIC DIAGRAM
— Ref. No. MV-34 Board; 4,000 Series — • See page 4-36 for MV-34 BOARD printed wiring board.



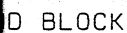


MV-34 (VHS SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM
— Ref. No. MV-34 Board; 4,000 Series —

• See page 4-36 for MV-34 BOARD printed wiring board.



9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
---	----	----	----	----	----	----	----	----	----	----	----	----	----	----

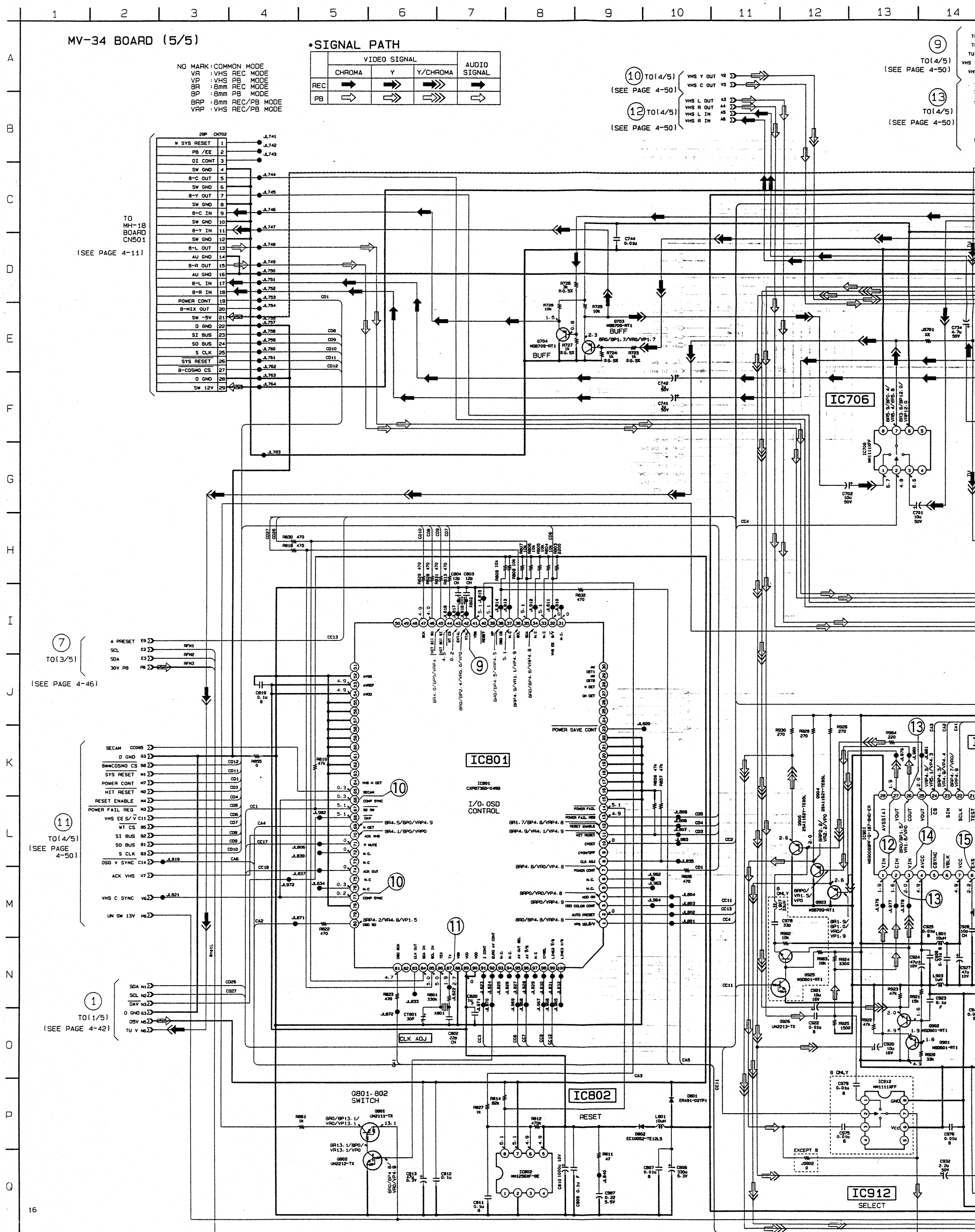


- See page 4-36 for MV-34 BOARD printed wiring board.



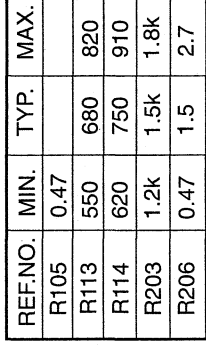


- See page 4-36 for MV-34 BOARD printed wiring board.



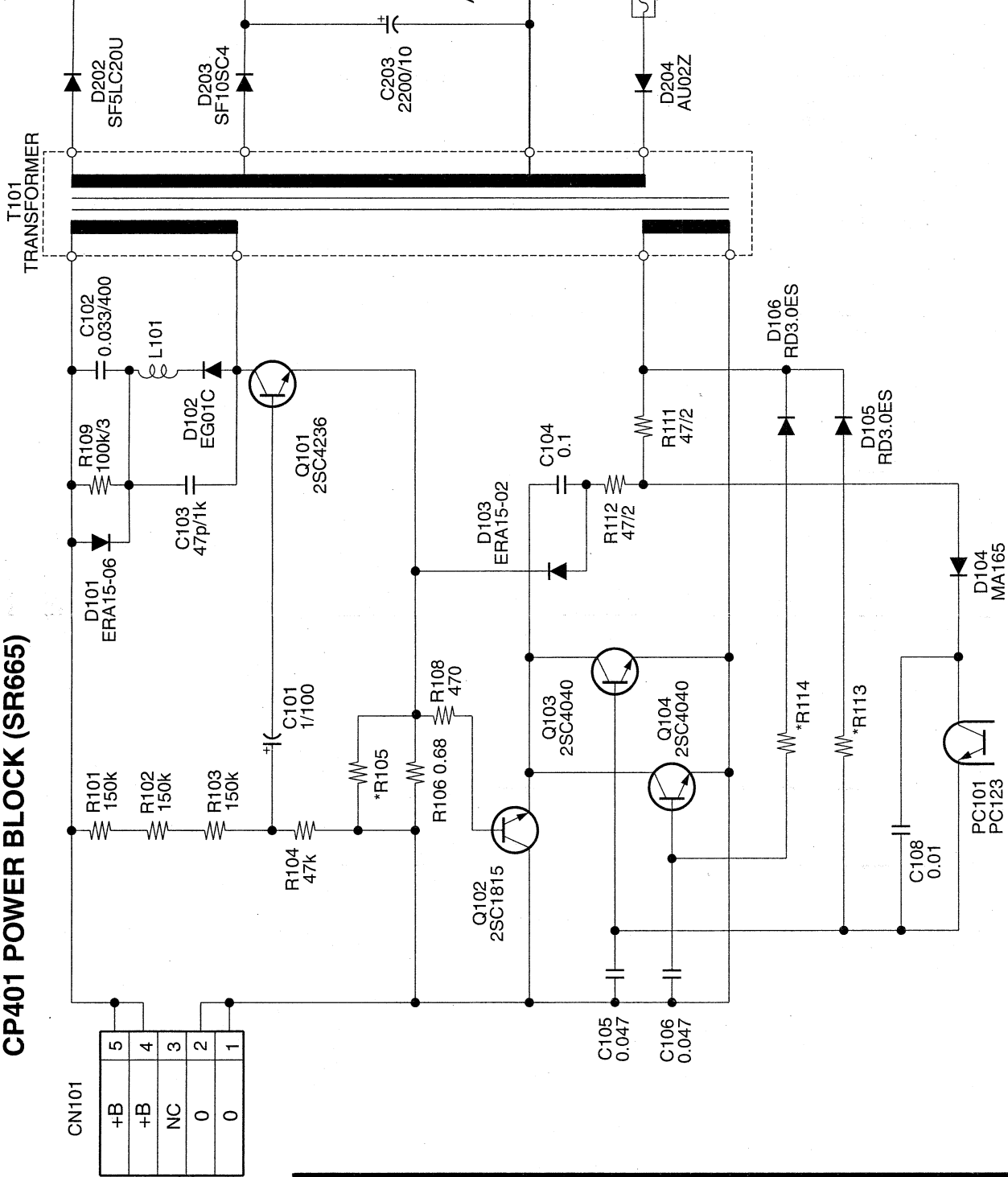
12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----



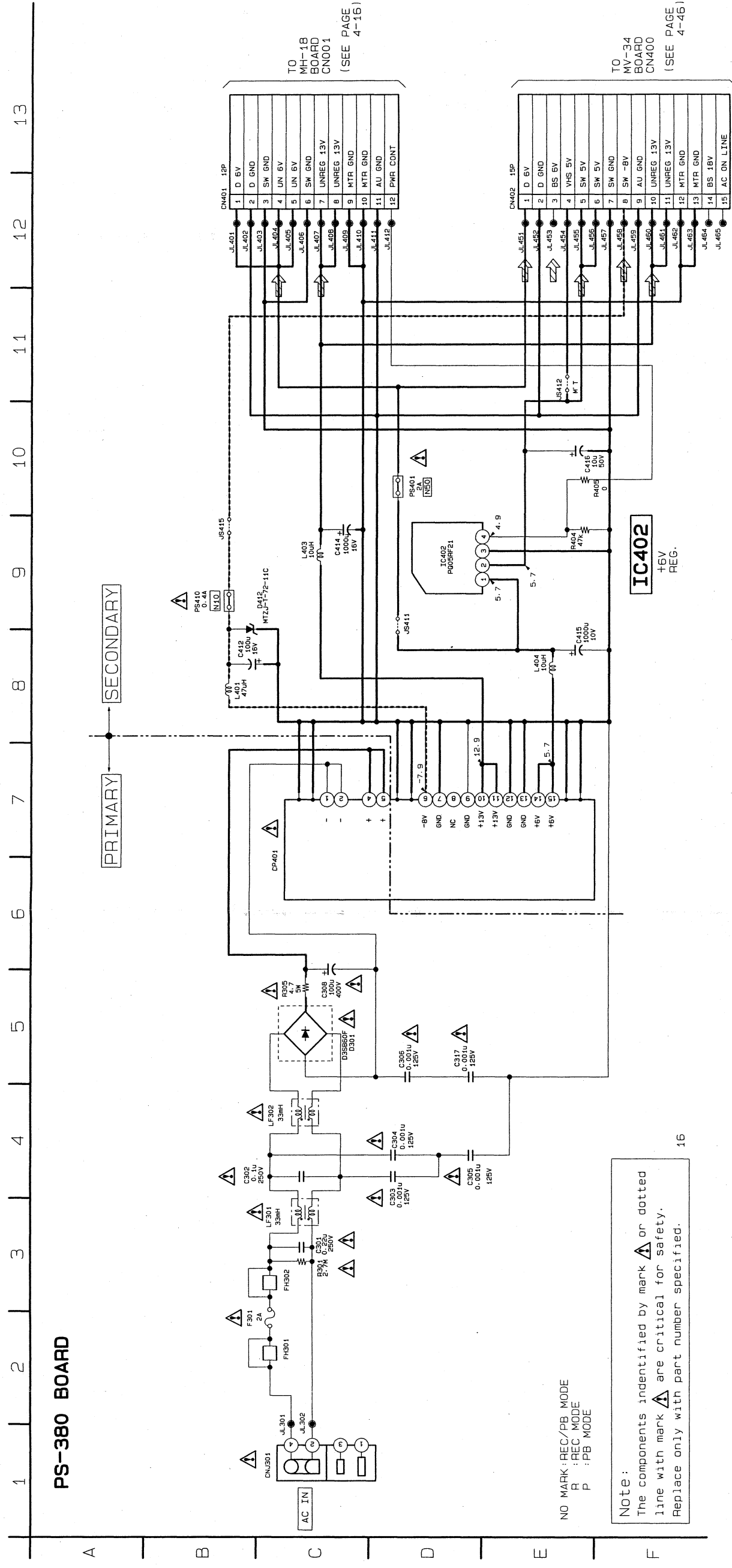


P-401 POWER BLOCK (SWITCHING REGULATOR SR665) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
- Ref. No. SR665 Board; 7,000 Series -

CP401 POWER BLOCK (SR665)



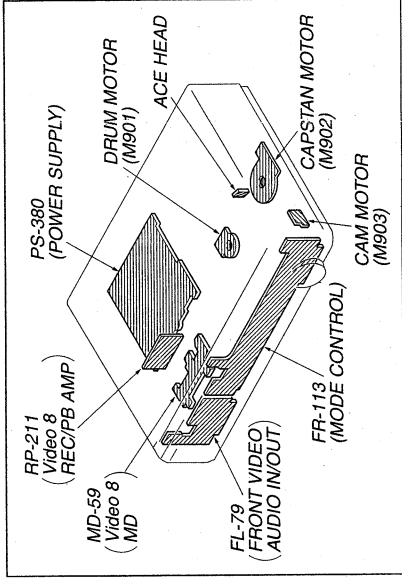
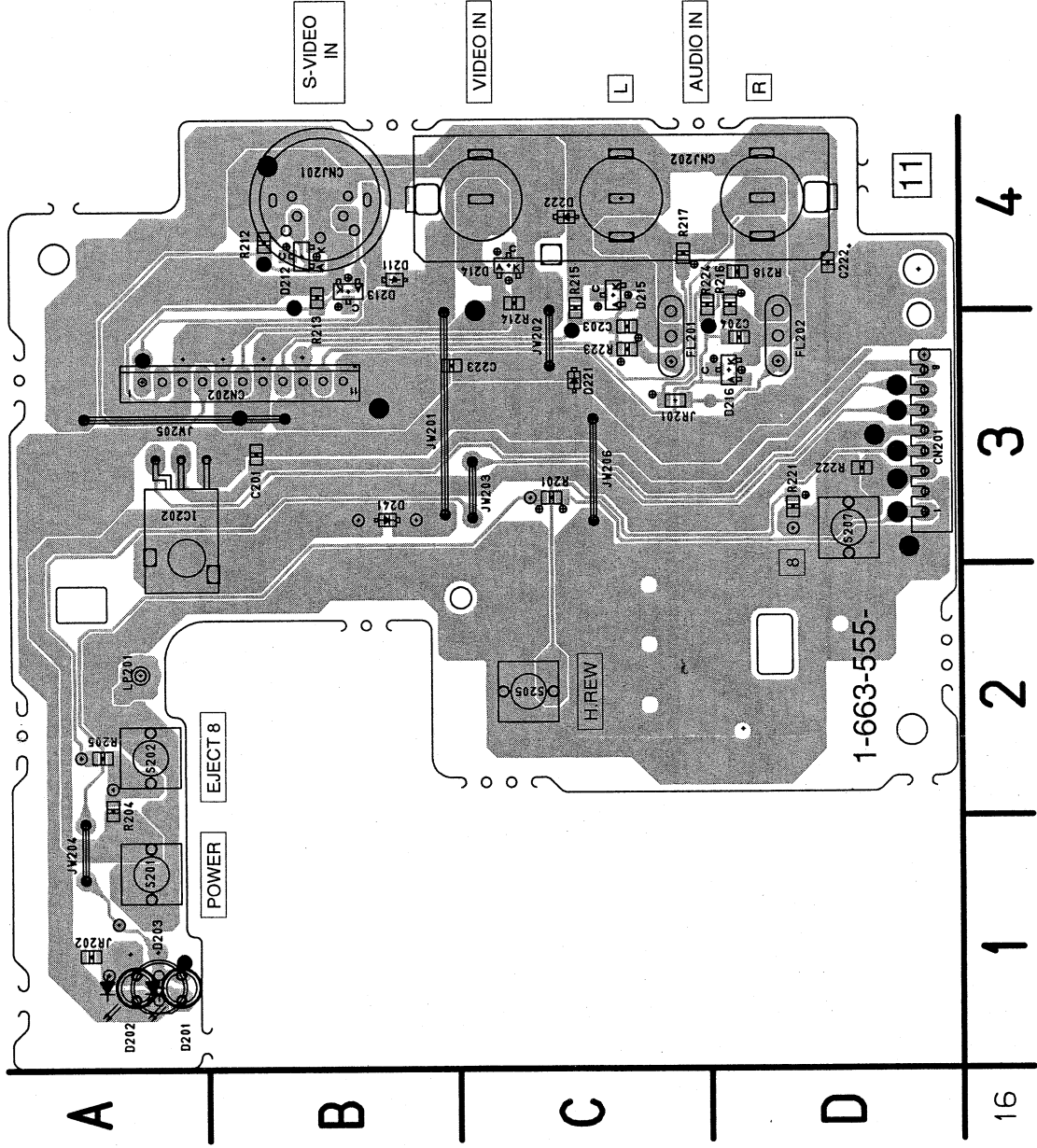
There are few cases that the part printed on this diagram isn't mounted in this model.



Note:
The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

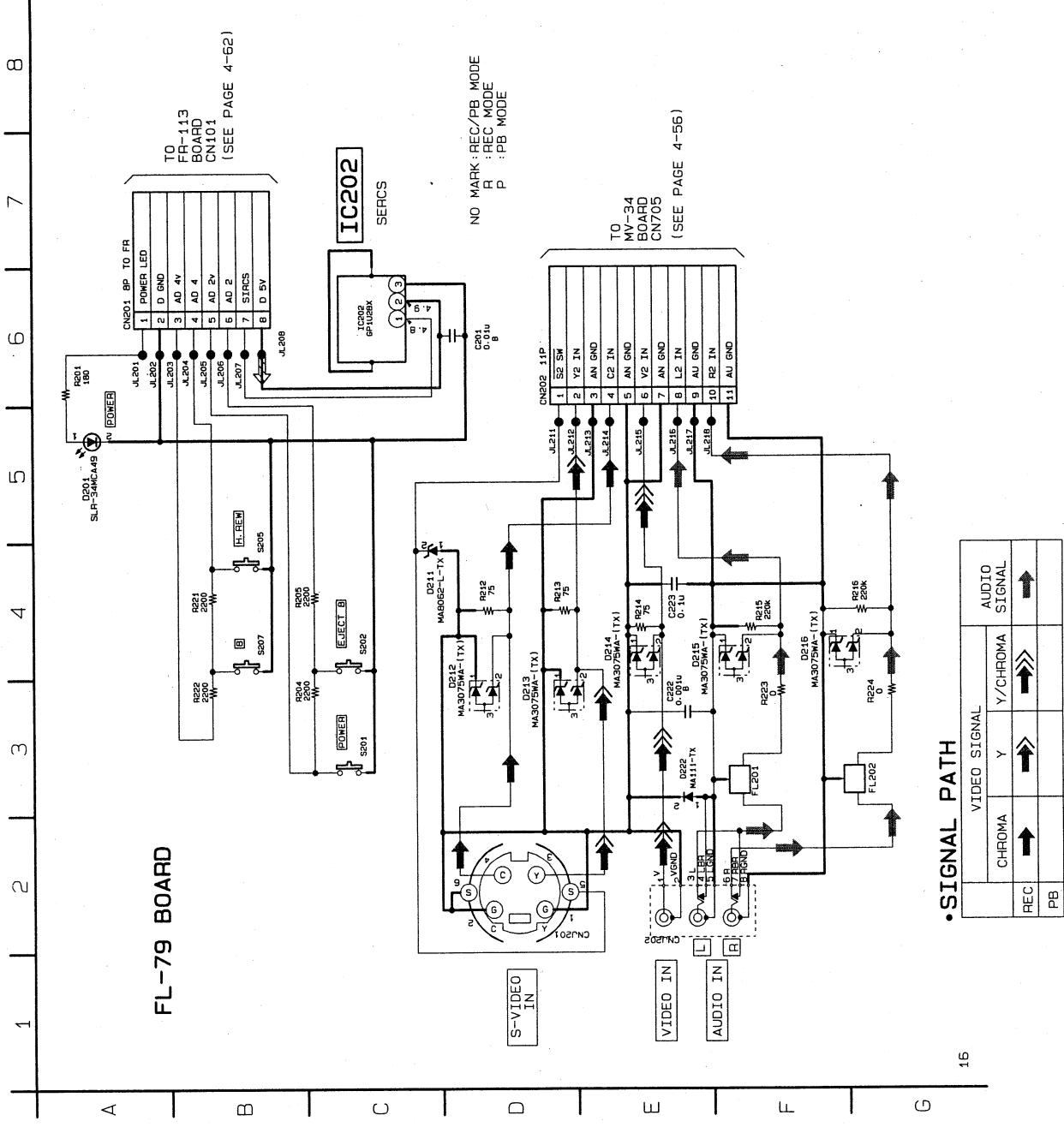
FL-79 (FRONT VIDEO, AUDIO IN/OUT) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
— Ref. No. FL-79 Board; 6,000 Series —

FL-79 BOARD (CONDUCTOR SIDE)



FRONT VIDEO, AUDIO IN/OUT
FL-79

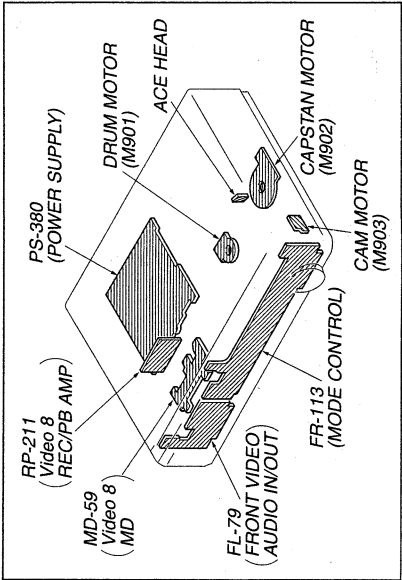
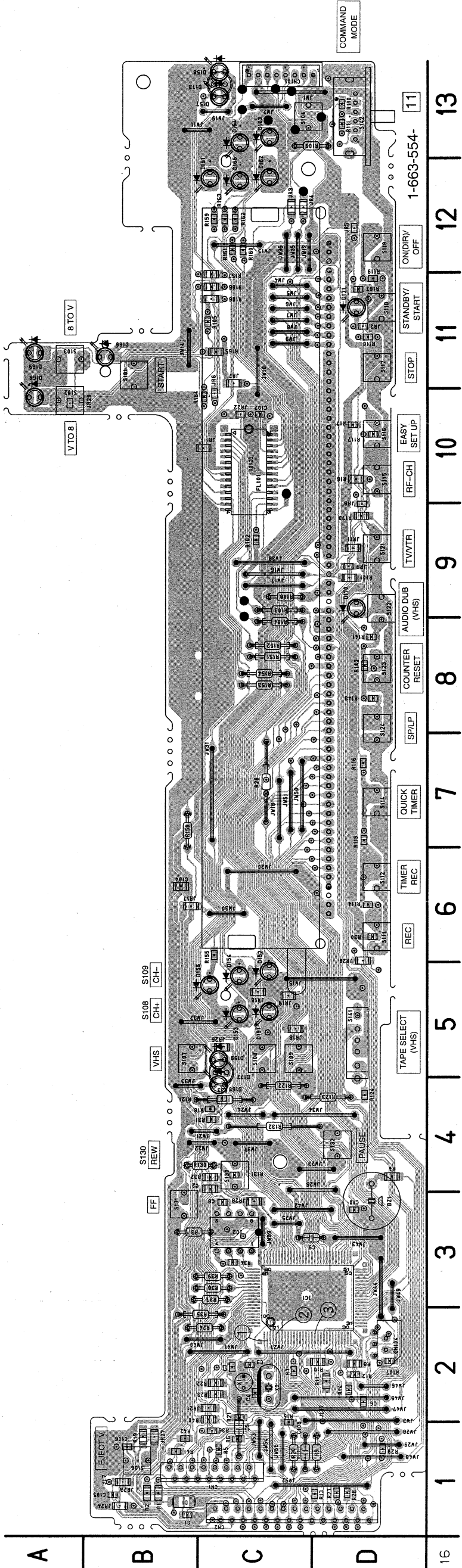
There are few cases that the part printed on this diagram isn't mounted in this model.

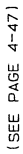


FR-113 (MODE CONTROL) PRINTED WIRING BOARD
— Ref. No. FR-113 Board; 6,000 Series —

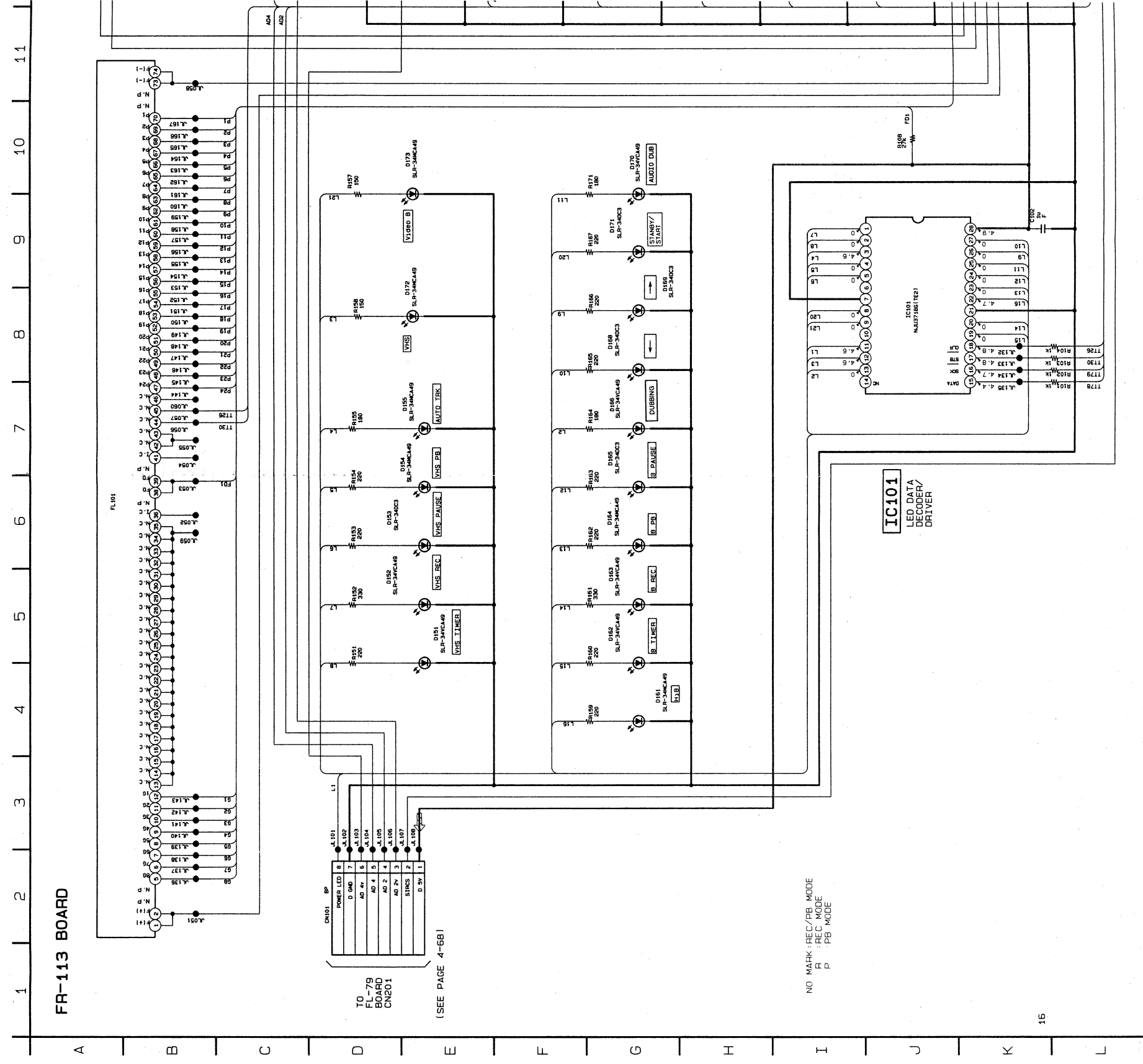
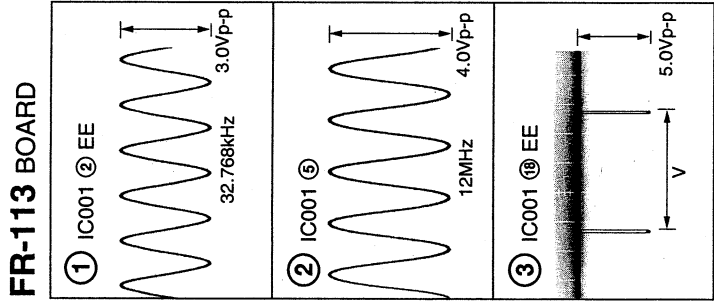
There are few cases that the part printed on this diagram isn't mounted in this model.

FR-113 BOARD (CONDUCTOR SIDE)





FR-113 (MODE CONTROL) SCHEMATIC DIAGRAM • See page 4-65 for FR-113 BOARD printed wiring board.
— Ref. No. FR-113 Board; 6,000 Series —



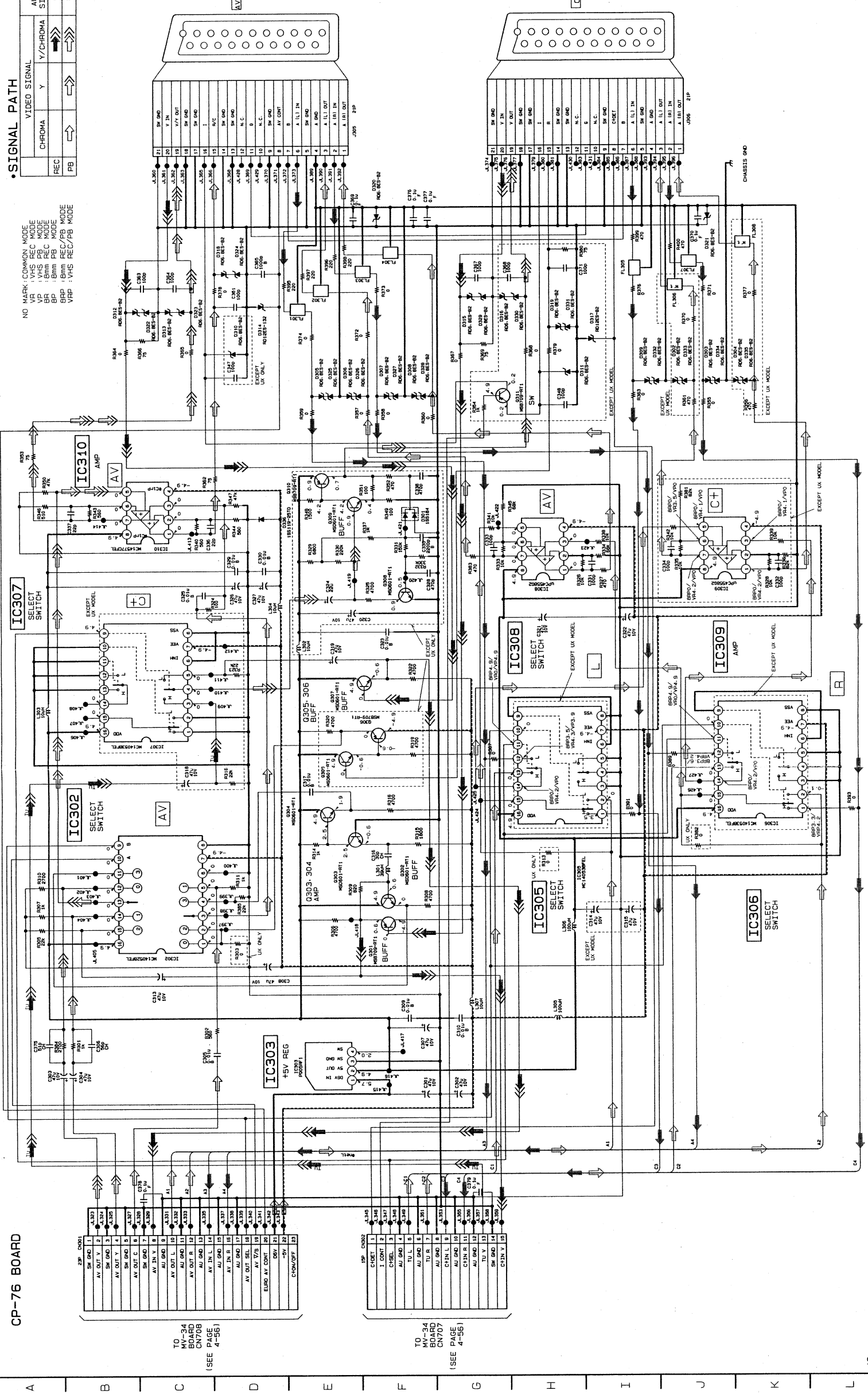
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

CP-76 BOARD

• SIGNAL PATH

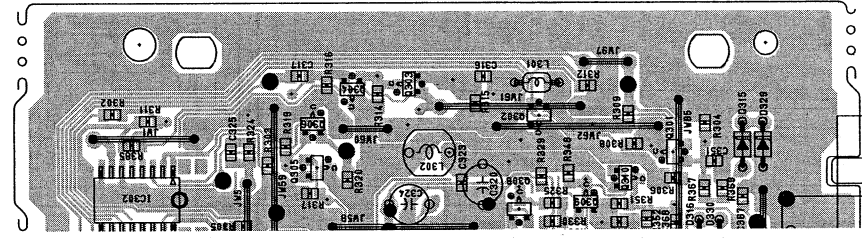
NO MARK: COMMON MODE
VR : VHS REC MODE
VP : VHS PB MODE
BR : 8mm REC MODE
BP : 8mm REC/PB MODE
VPP : VHS REC/PB MODE

	VIDEO SIGNAL		AUDIO SIGNAL
	CHROMA	Y	
REC	→	→	→
PB	→	→	→



TO MV-34 BOARD CN708 (SEE PAGE 4-56)

TO MV-34 BOARD CN707 (SEE PAGE 4-56)



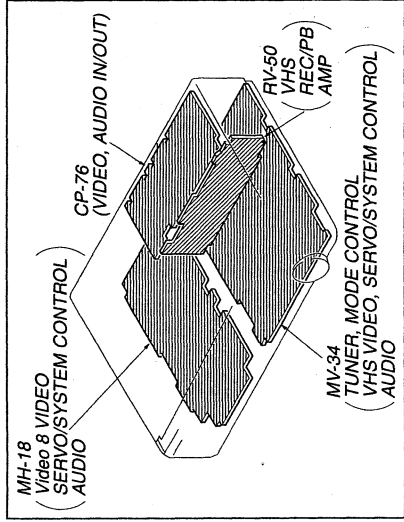
-663-552-

10

CP-76 (VIDEO, AUDIO IN/OUT) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
— Ref. No. CP-76 Board; 5,000 Series —

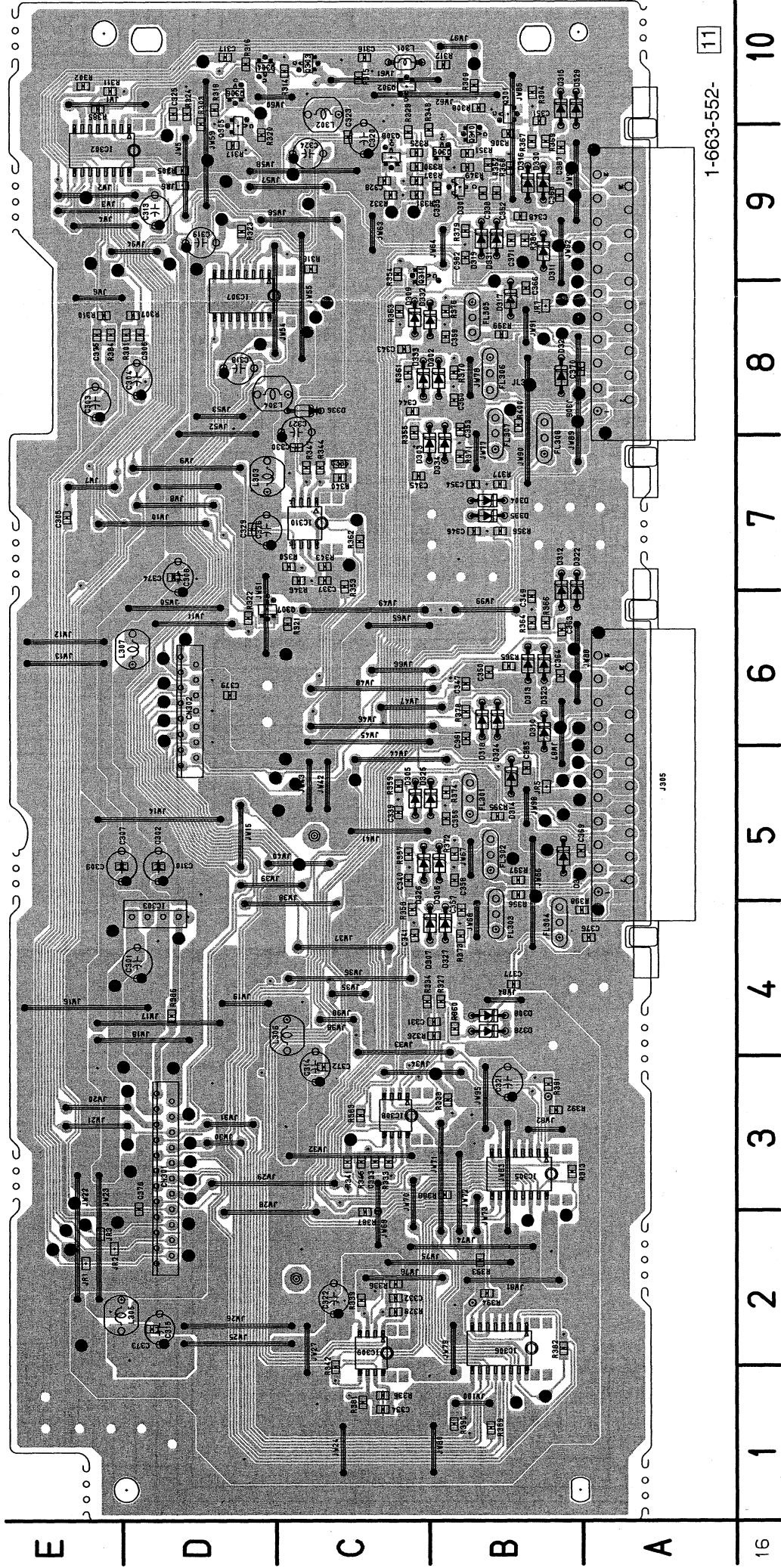
CP-76 BOARD

CN301	D-3	D330	B-9
CN302	D-6	D331	B-9
		D332	B-8
D301	B-9	D333	C-8
D302	B-8	D334	B-7
D303	B-7	D335	B-7
D304	B-7	D336	C-8
D305	C-5		
D306	B-5	IC302	E-9
D307	B-4	IC303	D-4
D308	B-4	IC305	B-3
D309	C-8	IC306	B-2
D310	B-6	IC307	D-8
D311	B-9	IC308	C-3
D312	B-7	IC309	C-2
D313	B-6	IC310	C-7
D314	B-5		
D315	B-10	J305	A-3
D316	B-9	J306	A-8
D317	B-8		
D318	B-6	Q301	B-10
D319	B-9	Q302	C-10
D320	B-5	Q303	C-10
D321	B-8	Q304	D-10
D322	B-7	Q305	D-9
D323	B-6	Q306	D-10
D324	B-6	Q307	D-6
D325	C-5	Q308	C-9
D326	C-5	Q309	B-9
D327	B-4	Q310	B-9
D328	B-4	Q311	C-9
D329	B-10		



There are few cases that the part printed on this diagram isn't mounted in this model.

CP-76 BOARD (CONDUCTOR SIDE)



1-663-552-11

SECTION 5 REPAIR PARTS LIST

5-1. EXPLODED VIEWS

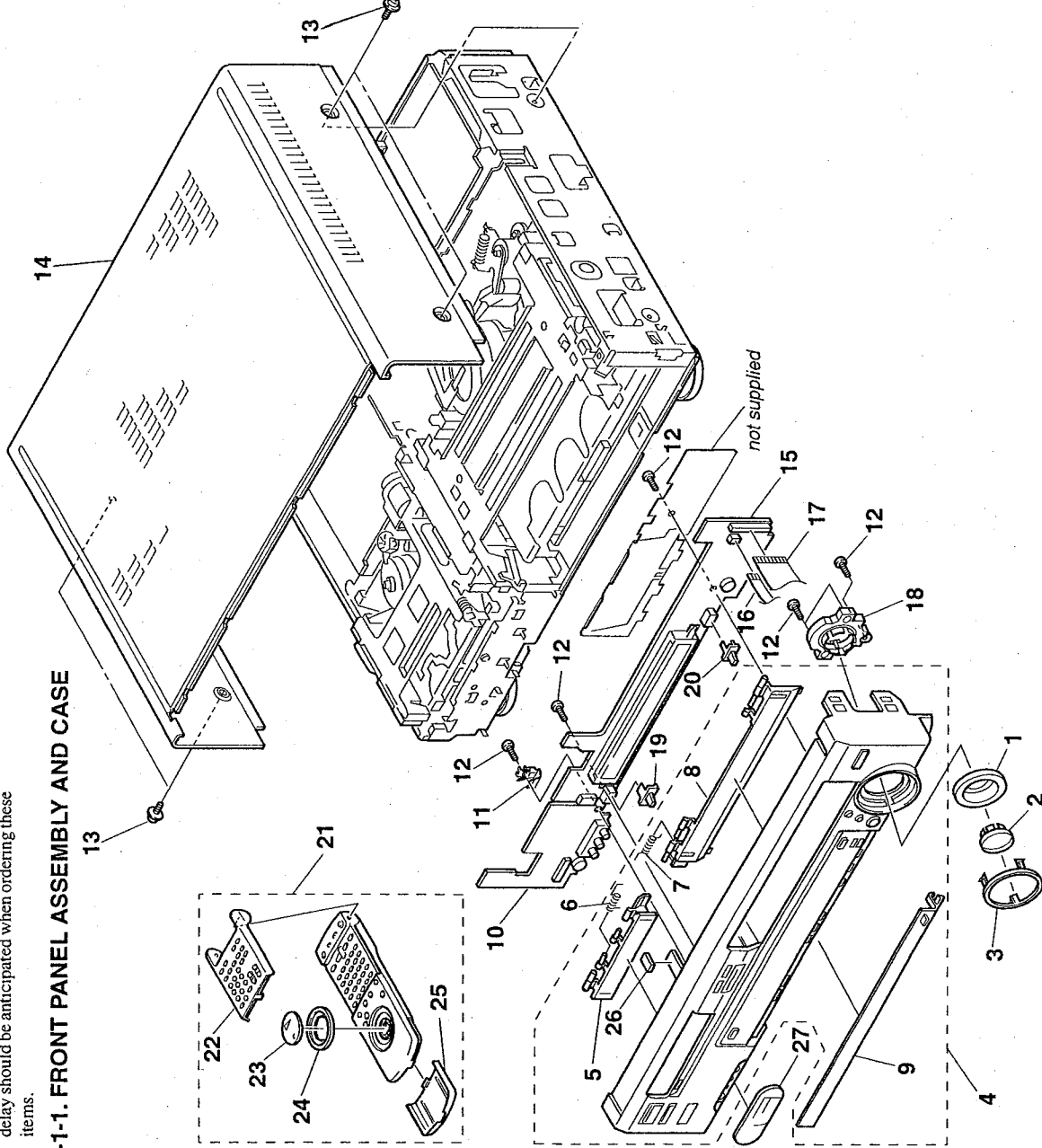
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.

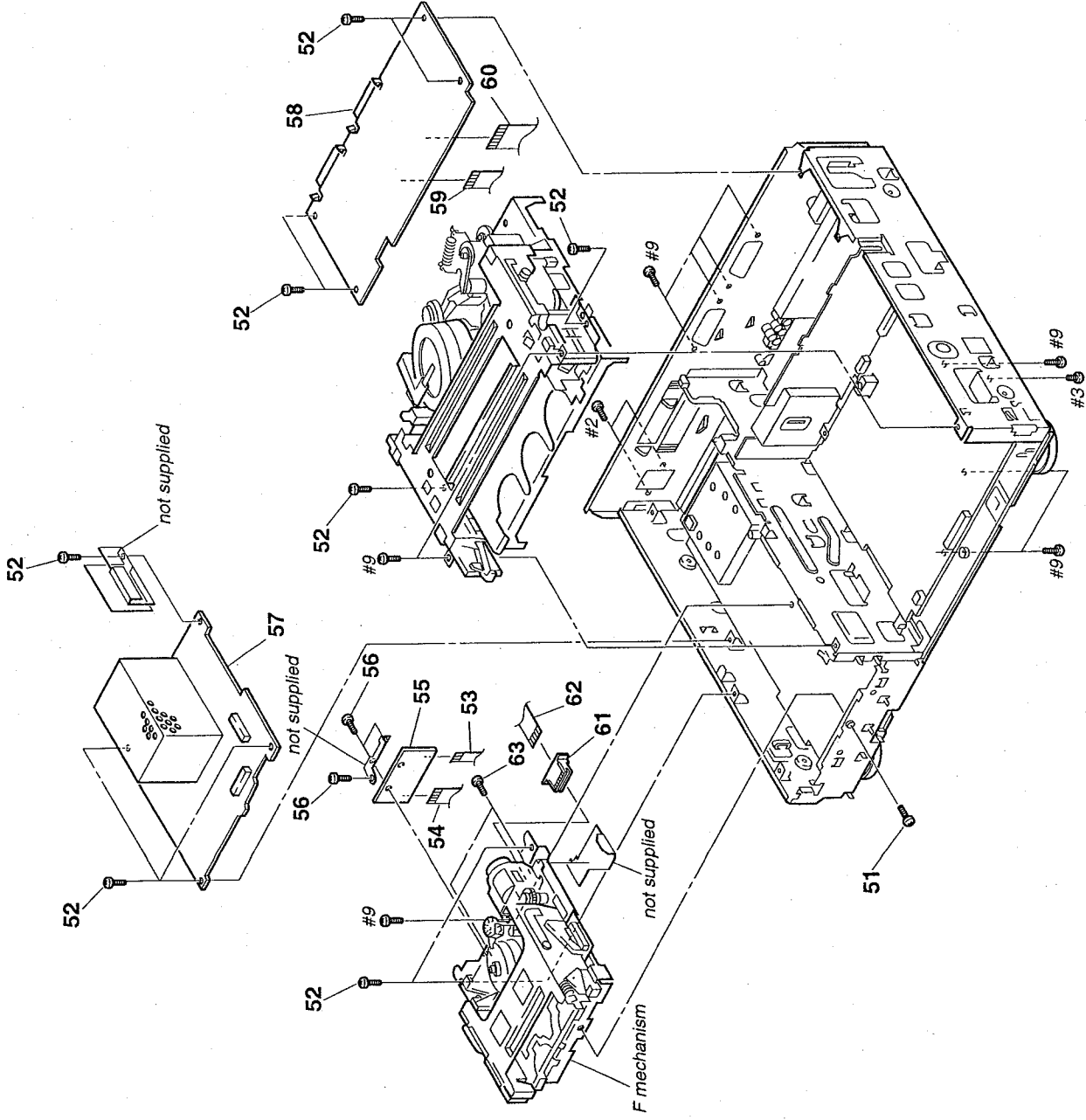
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

5-1-1. FRONT PANEL ASSEMBLY AND CASE



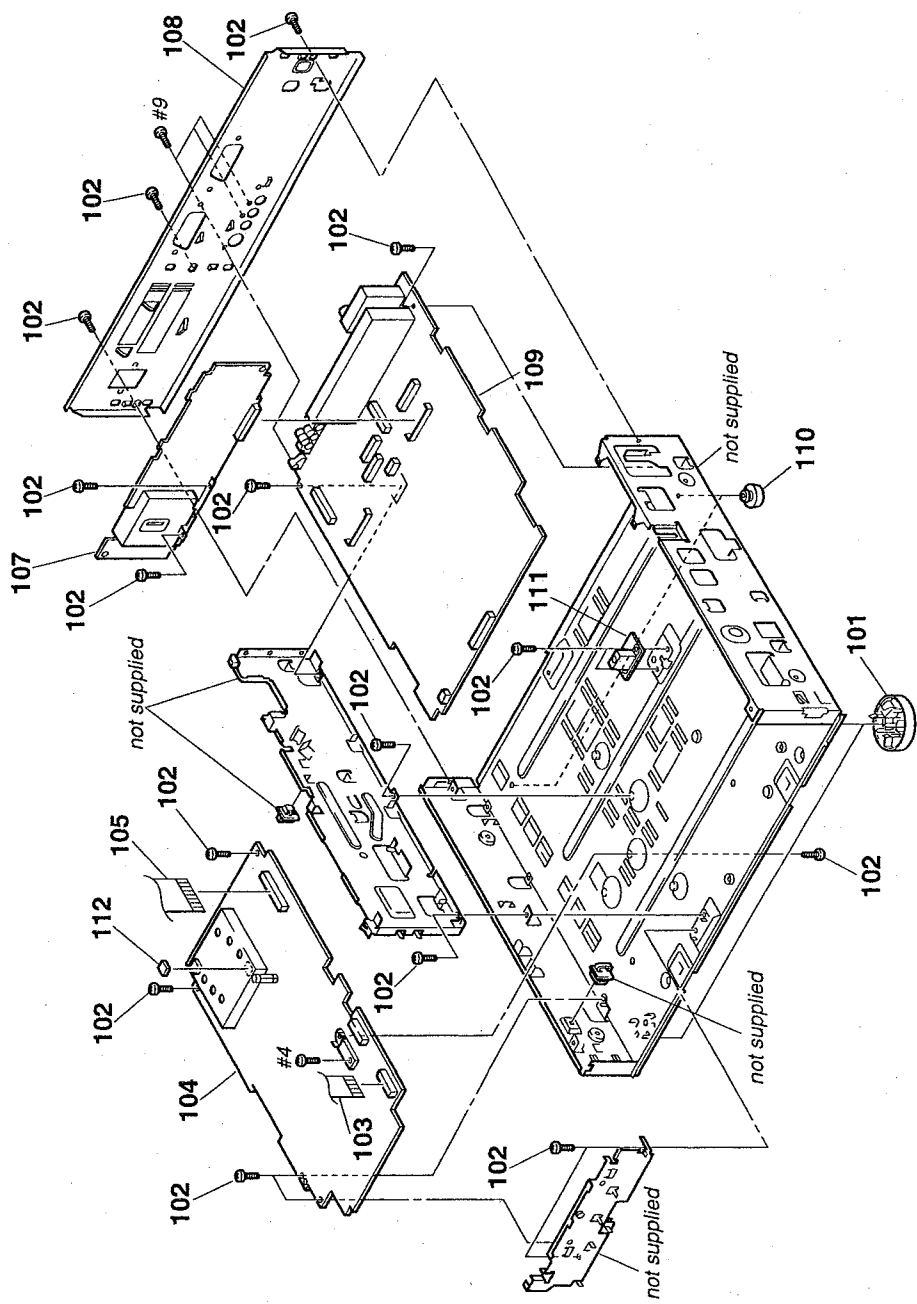
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
1	3-973-077-11	RING, CHANGE SPEED	* 15	A-7066-980-A	FR-113 (UX) BOARD, COMPLETE	
2	3-972-782-11	BUTTON, CENTER (AS,MN,NP,NR,UX,VC)	16	1-777-675-11	CABLE, FLAT (FUF-19) 5P	
2	3-972-782-41	BUTTON, CENTER (B)	17	1-777-671-11	CABLE, FLAT (FUF-17)	
3	3-974-511-01	PLATE, RING ORNAMENTAL	18	1-762-844-21	SWITCH, ROTARY	
4	X-3946-729-1	PANEL ASSY, FRONT (UX)	19	3-966-943-01	KNOB (IR), SLIDE (B)	
4	X-3946-730-1	PANEL ASSY, FRONT (VC)	19	3-966-943-11	KNOB (IR), SLIDE (AS,MN,NP,NR,UX,VC)	
4	X-3946-731-2	PANEL ASSY, FRONT (B)	20	3-966-944-01	KNOB (S), SLIDE (B)	
4	X-3946-732-1	PANEL ASSY, FRONT (NP,NR)	20	3-966-944-11	KNOB (S), SLIDE (AS,MN,NP,NR,UX,VC)	
4	X-3947-537-1	PANEL ASSY, FRONT (MN)	21	1-473-930-11	REMOTE COMMANDER (RMT-V194)(UX)	
4	X-3947-539-1	PANEL ASSY, FRONT (AS)	21	1-473-930-21	REMOTE COMMANDER (RMT-V194A)	
5	3-973-393-01	DOOR (-8), CASSETTE (EXCEPT AS,MN)	21	1-473-930-31	REMOTE COMMANDER (RMT-V194B)(B)	(NP,NR,VC)
5	3-973-393-21	DOOR (-8), CASSETTE (AS,MN)	21	1-473-930-41	REMOTE COMMANDER (RMT-V194C)(AS,MN)	
6	3-966-939-01	SPRING-8, FL	22	3-709-144-01	COVER (V194), REMOTE CONTROL (UX)	
7	3-953-432-01	SPRING (GE), FL	22	3-709-144-11	COVER (V194A), REMOTE CONTROL (NP,NR,VC)	
8	3-973-394-01	DOOR (-V), CASSETTE (EXCEPT AS,MN)	22	3-709-144-21	COVER (V194B), REMOTE CONTROL (B)	
8	3-973-394-21	DOOR (-V), CASSETTE (AS,MN)	22	3-709-144-31	COVER (V194C), REMOTE CONTROL (AS,MN)	
9	3-973-402-21	DOOR, FRONT	23	3-972-850-01	BUTTON, FUNCTION	
* 10	A-7073-109-A	FL-79 (UX) BOARD, COMPLETE	24	3-973-077-31	RING, CHANGE SPEED	
11	3-973-405-03	SPRING, DOOR LOCK (B)	25	3-709-044-01	COVER, BATTERY	
11	3-975-709-01	SPRING (N), DOOR LOCK (AS,MN,NP,NR,UX,VC)	26	3-940-954-11	CUSHION, FLY WHEEL	
12	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	27	3-974-877-01	COVER, AV (NP,NR,UX,VC)	
13	3-710-901-41	SCREW, TAPPING				
* 14	3-966-912-51	COVER, UPPER				

5-1-2. CHASSIS ASSEMBLY-1



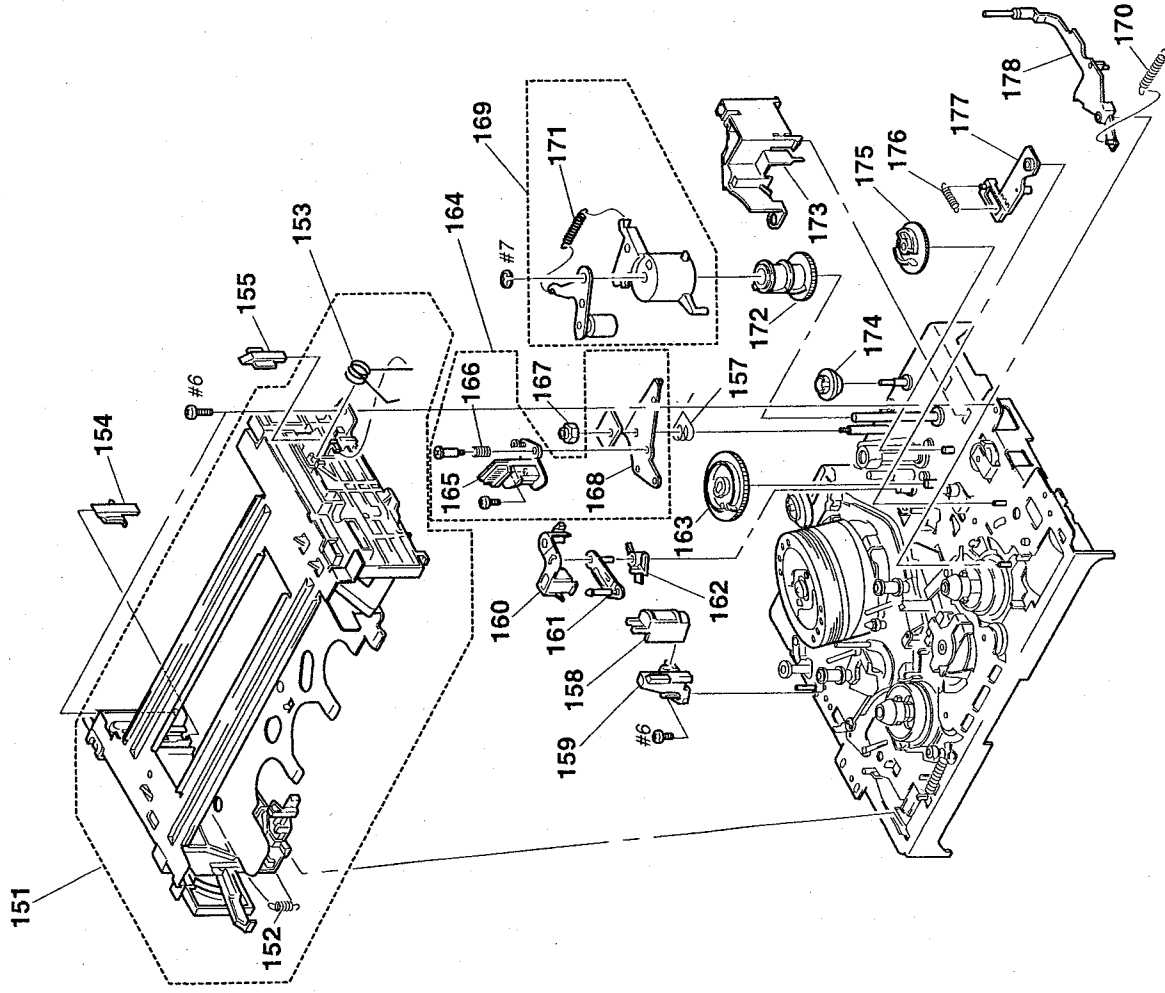
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
51	3-736-055-01	SCREW (3X8), TAPPING	* 58	A-7066-979-A	CP-76 (UX) BOARD, COMPLETE(UX)	
52	3-970-608-11	SUMMITTE (B3), +BV	59	1-777-674-11	CABLE, FLAT (FMC-9) 15P	
53	1-777-669-11	CABLE, FLAT (FMR-5)	60	1-777-673-11	CABLE, FLAT (FMC-8) 23P	
54	1-777-668-11	CABLE, FLAT (FMR-4)	61	1-764-137-11	CONNECTOR, TRANSLATION 15P	
* 55	A-7066-885-A	RP-211 (T) BOARD, COMPLETE	62	1-777-667-11	CABLE, FLAT (FMD-10)	
56	3-732-817-01	SCREW (2X4.5), TAPPING	63	3-968-341-01	SCREW 2X4.5, STEP	
* 57	A-7073-108-A	PS-380 (UX) BOARD, COMPLETE				
* 58	A-7066-975-A	CP-76 (VC) BOARD, COMPLETE				
		(AS,B,MN,NP,NR,VC)				

5-1-3. CHASSIS ASSEMBLY-2



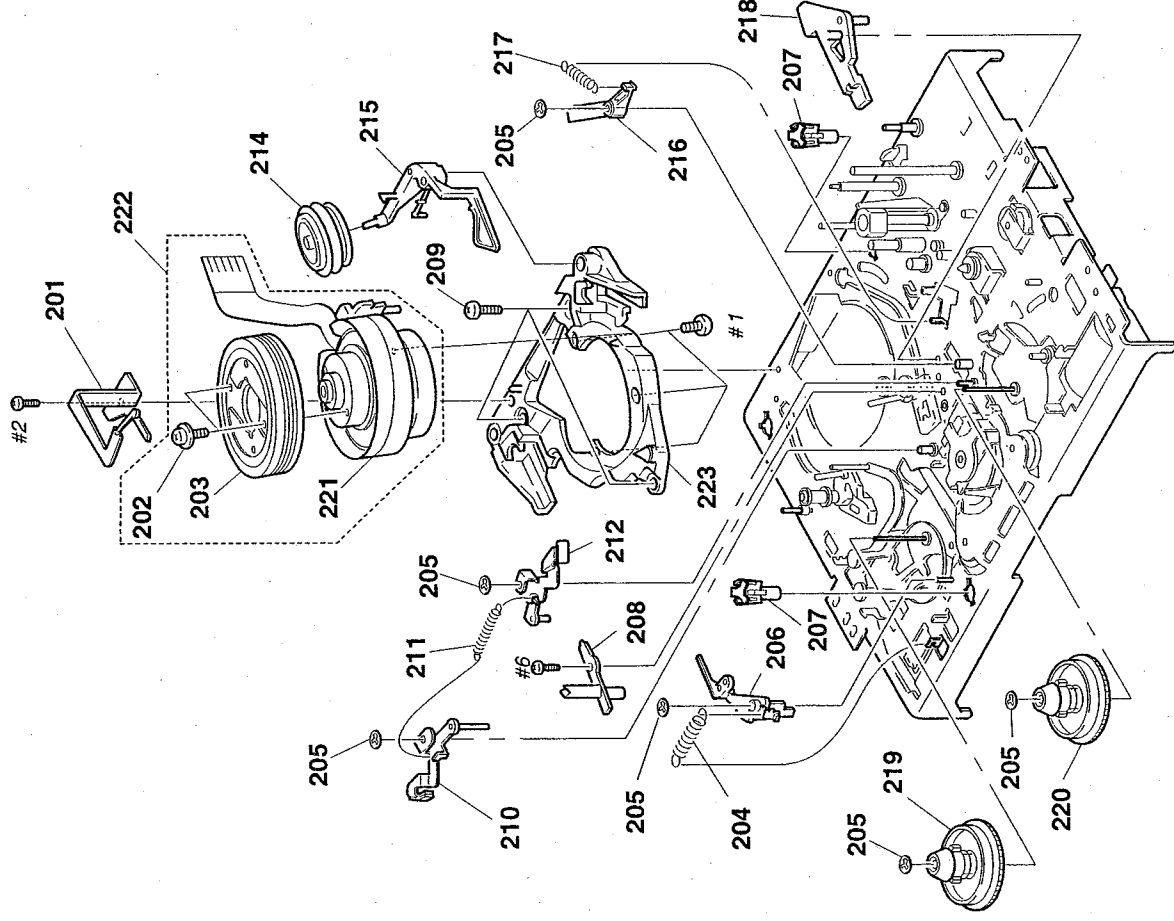
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
101	X-3946-574-1	INSULATOR ASSY	* 108	3-972-871-31	PANEL, REAR (B)	
102	3-970-608-11	SUMITITE (B3), +BV	* 108	3-972-871-41	PANEL, REAR (MN,NP,NR)	
103	1-777-340-11	CABLE, FLAT (FMD-11) 19P	* 109	A-7066-973-A	MV-34 (NP) BOARD, COMPLETE(MN,NP,NR)	
* 104	A-7066-976-A	MH-18 (UX) BOARD, COMPLETE	* 109	A-7066-974-A	MV-34 (VC) BOARD, COMPLETE(AS,VC)	
105	1-777-848-11	CABLE, FLAT (FMM-20)	* 109	A-7066-977-A	MV-34 (UX) BOARD, COMPLETE(UX)	
* 107	A-7066-978-A	RV-50 (P) BOARD, COMPLETE	* 109	A-7066-998-A	MV-34 (B) BOARD, COMPLETE(B)	
		(AS,MN,NP,NR,UX,VC)	110	3-957-819-01	FOOT	
* 107	A-7066-999-A	RV-50 (B) BOARD, COMPLETE(B)	* 111	3-966-909-01	BASE (V), MD	
* 108	3-972-871-11	PANEL, REAR (UX)	112	3-513-007-02	CUSHION, LOCK PLATE	
* 108	3-972-871-21	PANEL, REAR (AS,VC)				

5-1-4. MECHANISM DECK ASSEMBLY-1



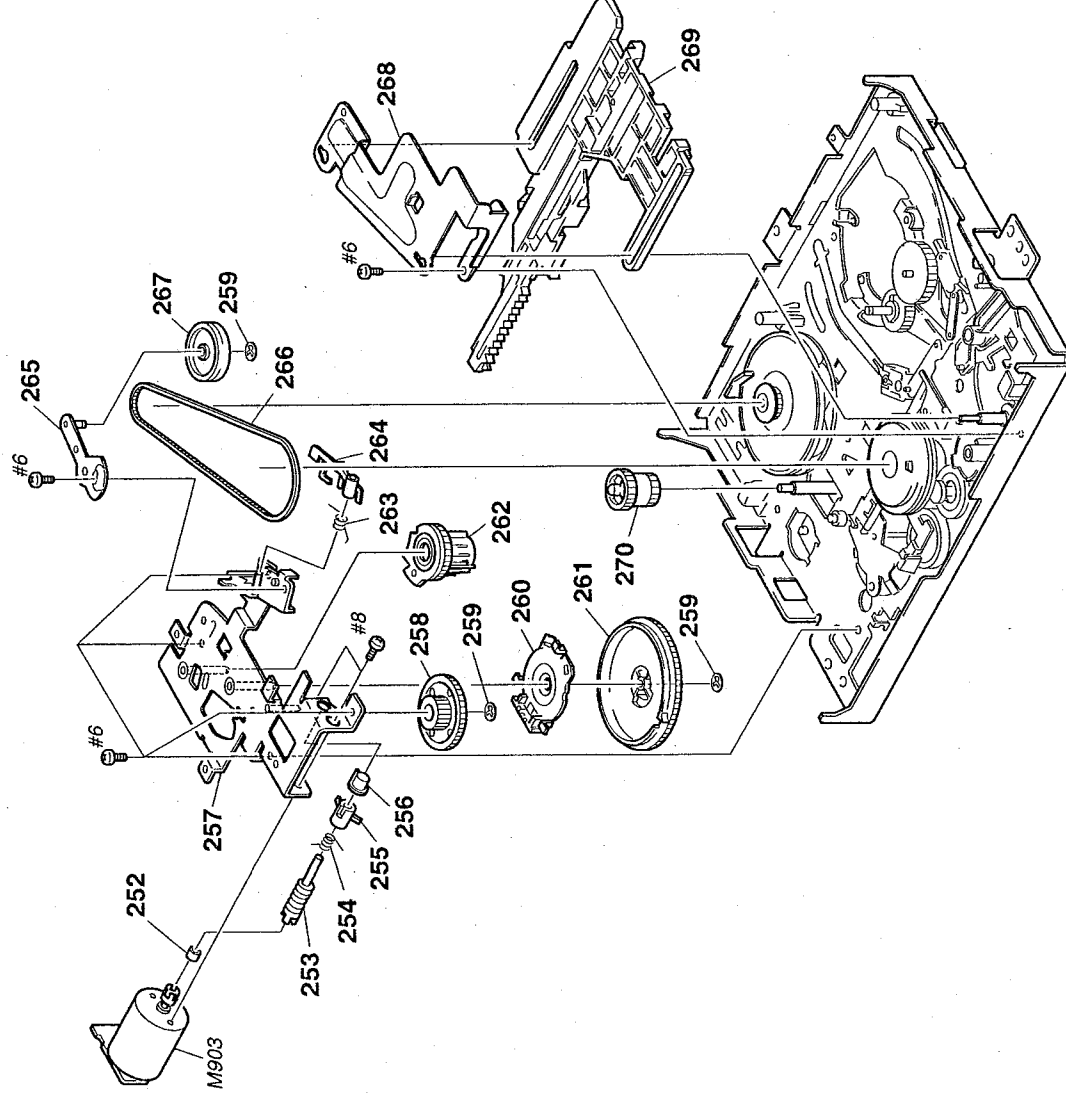
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
151	A-6759-603-A	FL BLOCK ASSY	165	1-506-485-11	PIN, CONNECTOR 6P	
152	3-958-467-01	SPRING, TENSION COIL	166	3-960-439-02	SPRING (ACE), COMPRESSION	
153	3-970-471-01	SPRING, TORSION	167	3-942-867-01	NUT, AC HEIGHT ADJUSTMENT	
154	3-958-488-03	PLATE, LIGHT GUIDE, END SENSOR	168	3-958-491-01	BASE, ACE	
155	3-970-473-01	PLATE, LIGHT GUIDE, TOP SENSOR	169	A-6746-072-A	PRESS BLOCK ASSY, PINCH	
157	3-958-487-01	SPRING, (ACE) TORSION COIL	170	3-958-505-01	SPRING (SOFT BRAKE T), TENSION	
158	1-500-144-11	HEAD, FE	171	3-958-455-01	SPRING (PINCH), TENSION	
159	X-3945-348-2	FEH ASSY	172	3-958-151-01	GEAR, ELEVATOR	
160	3-962-298-01	BRACKET, TG7 TAPE	173	3-958-454-01	OPNER, LID	
161	X-3944-797-1	TG8 ASSY	174	3-958-501-01	SCREW, ACE ADJUSTMENT	
162	3-958-421-01	HOLDER, TG8	175	3-958-153-01	GEAR, PRESS	
163	3-958-152-01	GEAR, TG8	176	3-958-462-01	SPRING (RVS BRAKE), TENSION	
164	A-6736-103-A	ACE BLOCK ASSY	177	X-3943-885-1	ARM ASSY, RVS BRAKE	
			178	X-3943-882-1	BRAKE (T) ASSY, SOFT	

5-1-5. MECHANISM DECK ASSEMBLY-2



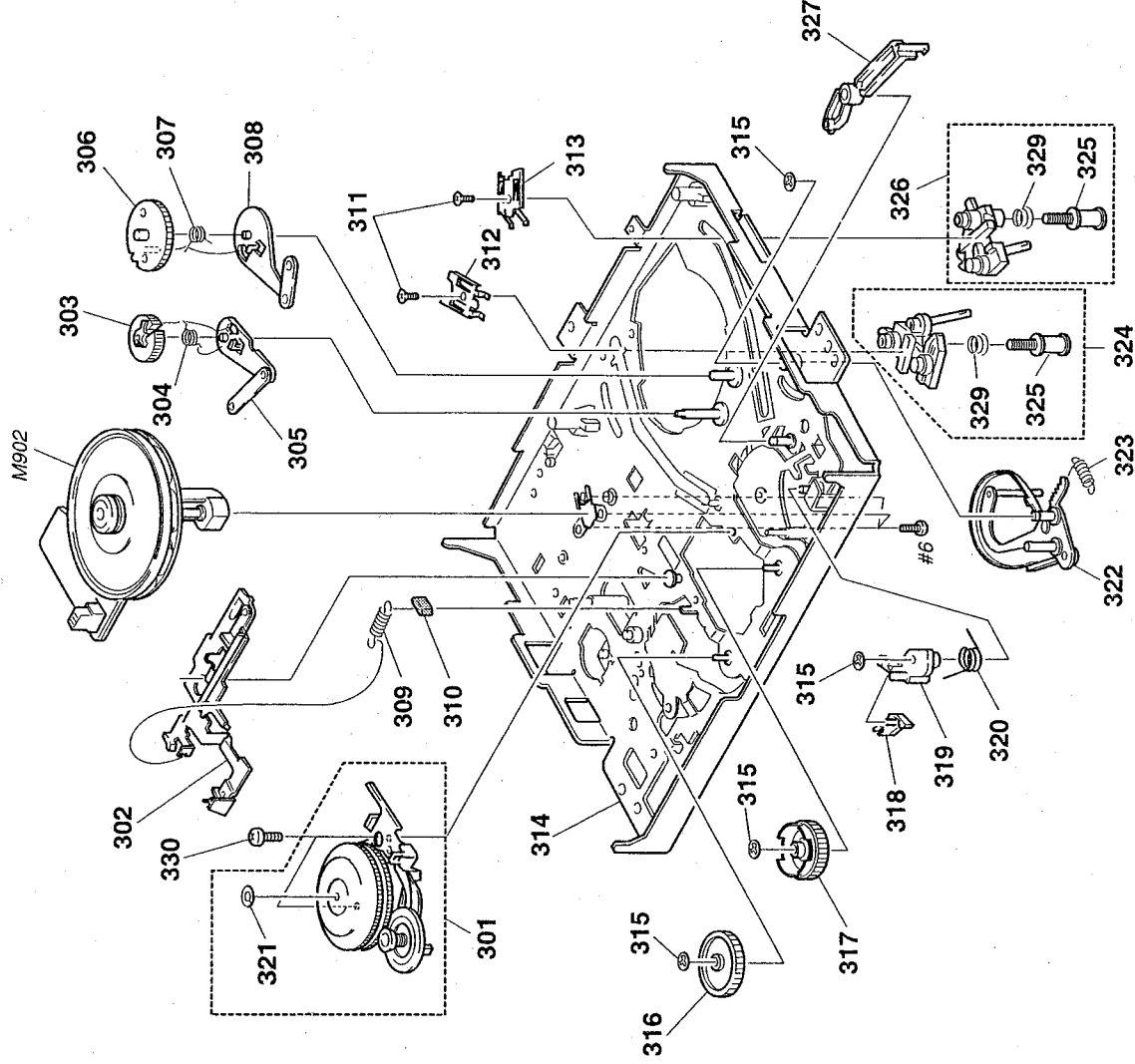
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
201	X-3943-899-8	GROUND ASSY, SHAFT(EXCEPT L2)	212	X-3945-444-1	ARM (T) ASSY, MAIN BRAKE	
202	2-643-205-01	SCREW	214	X-3947-255-1	ROLLER ASSY, HC	
203	8-848-622-02	UPPER DRUM ASSY DZR-66-R (M901)	215	3-975-724-01	ARM, HC	
204	3-958-443-01	SPRING, STRETCH COIL SPRING	216	3-960-139-01	ARM, NEUTRALITY	
205	3-669-595-00	WASHER (2), STOPPER	217	3-958-535-01	SPRING, TENSION	
206	3-958-450-01	BRAKE (S), SOFT	218	3-960-138-01	ARM, PENDULUM COMPUSSION	
207	3-958-390-01	SHAFT, PC BOARD	219	X-3943-902-1	TABLE, REEL (S) ASSY	
208	3-958-391-01	PLATE, LIGHT GUIDE, LED	220	X-3943-903-1	TABLE, REEL (T) ASSY	
209	3-961-441-01	SCREW (3x8)	221	8-848-666-11	LOWER DRUM ASSY DZL-51B/J-RP (M901)	
210	X-3945-443-1	BRAKE (S) ASSY, MAIN	223	3-969-629-01	DRUM BASE	
211	3-958-517-01	SPRING, TENSIONCOIL				

5-1-6. MECHANISM DECK ASSEMBLY-3



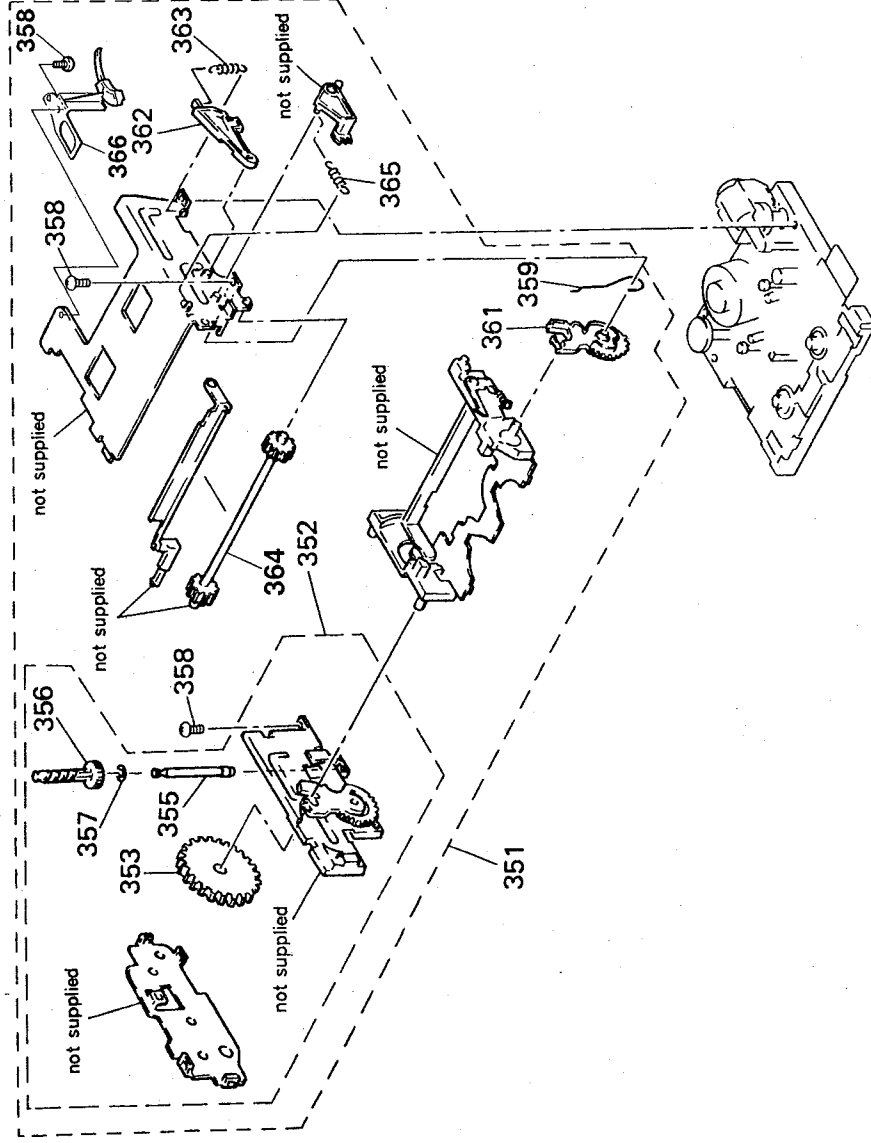
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
252	3-959-840-11	RUBBER, JOINT	262	3-958-156-03	GEAR, FL DRIVING	
253	3-958-159-01	WORM	263	3-958-445-01	SPRING, TORSION COIL (CAP BRAKE)	
254	3-958-460-01	SPRING, ONE-WAY	264	X-3943-888-1	BRAKE ASSY, CAP	
255	3-958-160-01	PROPELLOR	265	X-3943-889-1	ARM ASSY, TENSION VEHICLE	
256	3-958-155-01	BEARING, CAM MOTOR	266	3-958-361-01	BELT, TIMING	
* 257	X-3943-884-1	CHASSIS ASSY, CAM MOTOR	267	3-958-448-01	WHEEL, TENSION	
258	3-958-157-02	WHEEL, WORM	* 268	3-959-763-01	RETAINER	
259	3-669-595-00	WASHER (2), STOPPER	269	3-958-163-04	SLIDER, MAIN	
260	1-762-076-11	SWITCH, ROTARY	270	3-958-162-02	GEAR, UPPER/LOWER COMMUNICATION	
261	3-958-161-07	GEAR, CAM	M903	X-3943-883-1	MOTOR ASSY, CAM	

5-1-7. MECHANISM DECK ASSEMBLY-4



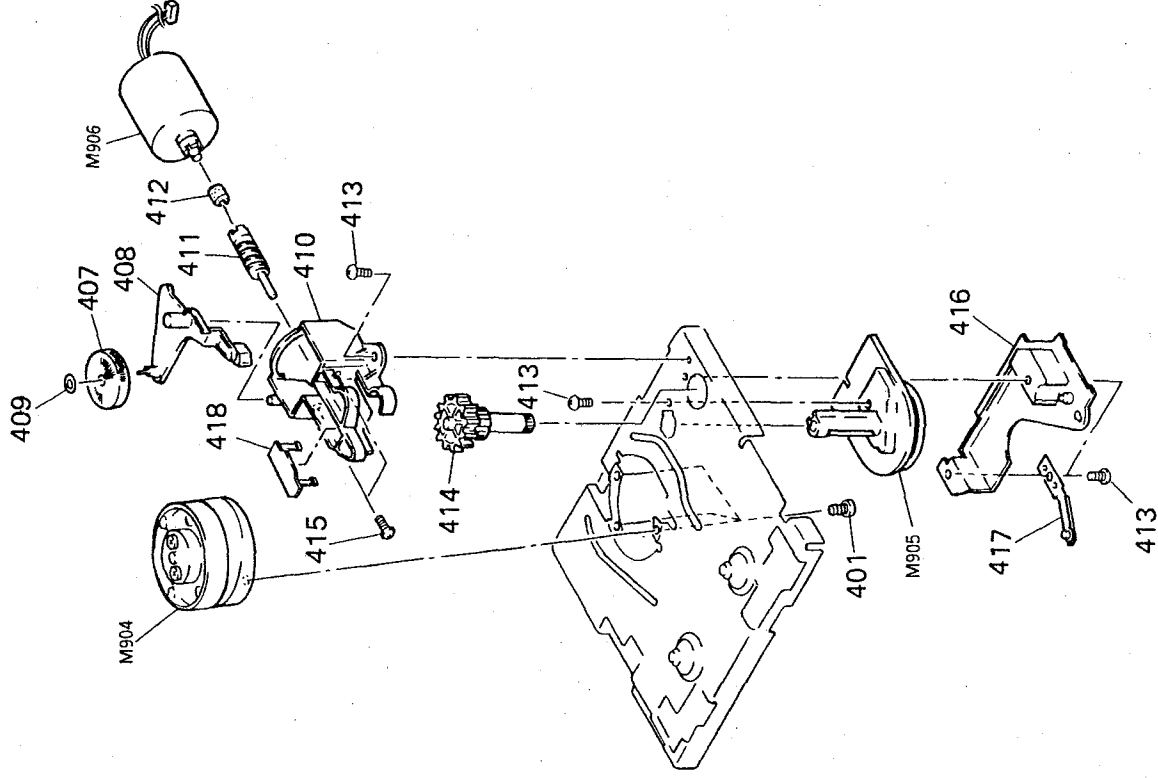
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
301	A-6739-102-A	RKB BLOCK ASSY	316	3-962-960-01	GEAR (T-K), IDLER	
302	X-3943-897-1	LEVER ASSY, TRIGGER	317	3-962-959-01	GEAR (S-K), IDLER	
303	3-958-485-02	GEAR (T), LOADING	318	3-958-533-01	CLAW, S WINDING	
304	3-960-449-01	SPRING (T), TORSION COIL	319	3-958-532-01	ARM, S WINDING	
305	X-3943-891-3	LEVER (T) ASSY, LOADING	320	3-958-534-01	SPRING, TORSION	
306	3-958-476-01	GEAR (S), LOADING	321	3-966-092-01	RING, RETAINING, SLIT WASHER	
307	3-960-448-01	SPRING (S), TORSION COIL	322	X-3943-886-1	TG1 ASSY	
308	X-3943-890-2	LEVER (S) ASSY, LOADING	323	3-958-492-01	SPRING (TG1), TENSION COIL	
309	3-958-529-01	SPRING (MOMENT), TENSION	324	A-6750-325-A	T BLOCK ASSY, SHUTTLE	
310	3-959-840-11	RUBBER, JOINT	325	X-3944-378-1	ROLLER ASSY, GUIDE	
311	3-960-720-01	SCREW	326	A-6750-316-A	SHUTTLE (S) BLOCK ASSY	
312	3-960-688-01	SPRING, LEAF (T), LOADING	327	3-958-504-01	ARM, FIXED RELEASE	
313	3-960-687-01	SPRING, LEAF (S), LOADING	329	3-965-178-01	SPRING	
314	X-3945-485-4	CHASSIS ASSY, MECHANICAL	M902	1-698-409-14	MOTOR, DC (CAPSTAN)	
315	3-669-595-00	WASHER (2), STOPPER				

5-1-8. Video 8 CASSETTE COMPARTMENT ASSEMBLY



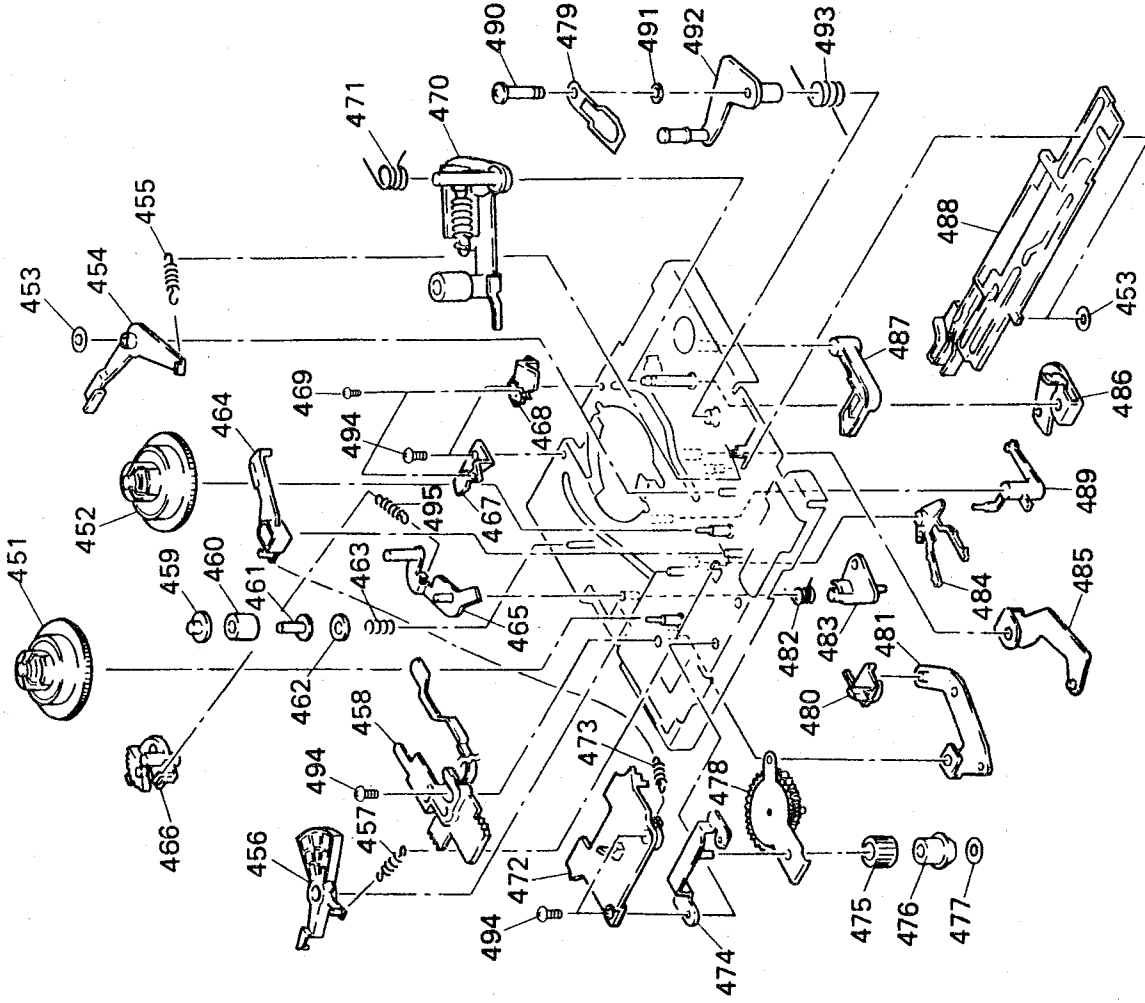
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
351	A-7092-566-H	FL BLOCK ASSY (FLAT)	359	3-954-042-01	SPRING, PRESS	
352	A-7093-114-A	PLATE (S) BLOCK ASSY, SIDE (FLAT)	361	3-954-033-01	ARM (T), DRIVING	
353	3-954-019-01	WHEEL, FL WORM	* 362	3-954-040-01	ARM, CASSETTE IN SWITCH	
* 355	3-954-029-01	SHAFT, FL WORM GEAR	363	3-954-043-01	SPRING, TENSION	
356	3-954-028-01	GEAR, FL WORM	364	X-3942-942-2	GEAR ASSY, JOINT	
357	3-738-212-11	RETAINER, THRUST, REEL TABLE	365	3-954-044-01	SPRING, TENSION	
358	3-732-817-01	SCREW (2X4.5), TAPPING	366	3-967-578-01	GUARD, TAPE	

5-1-9. Video 8 MECHANISM DECK ASSEMBLY-1



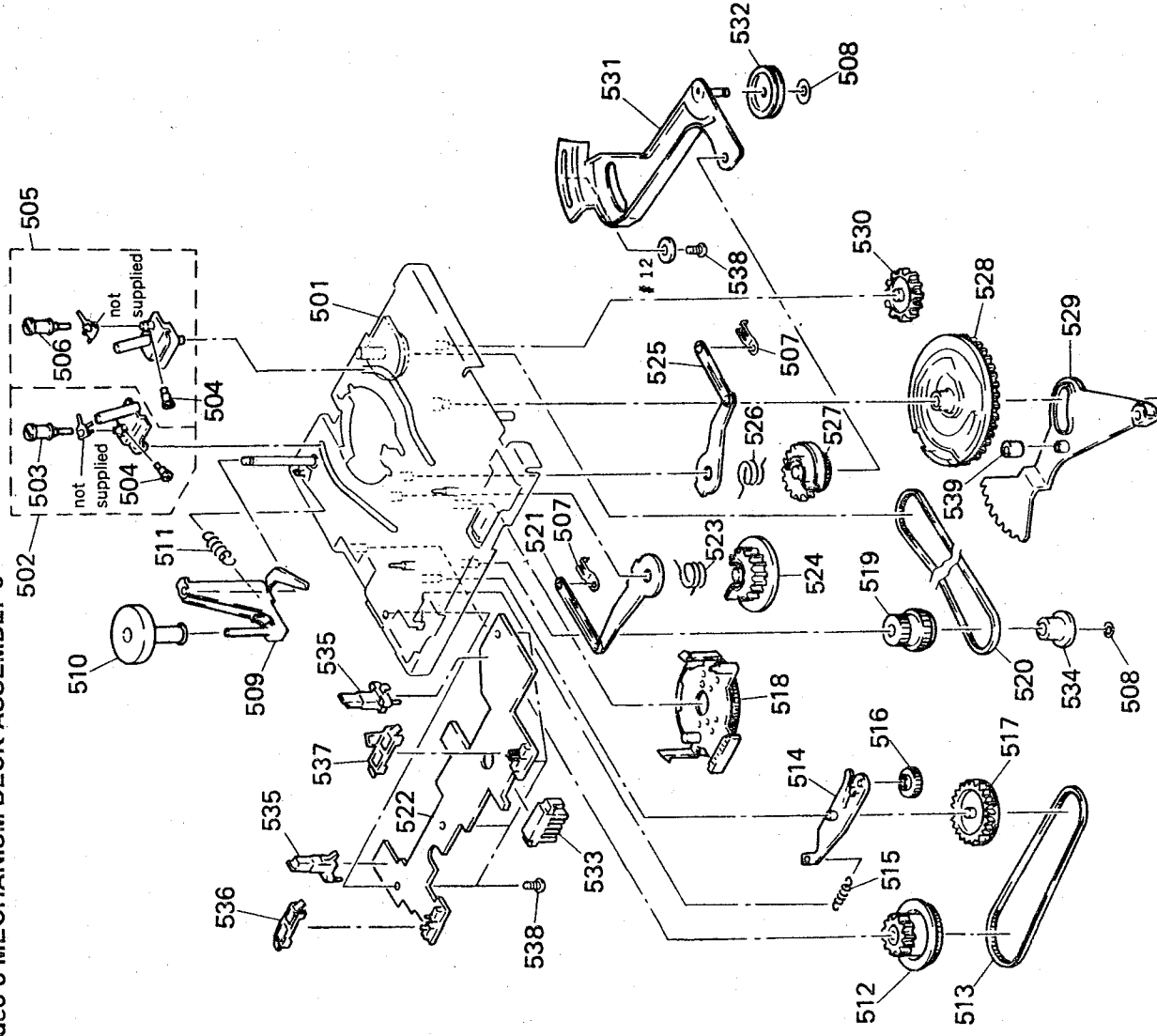
Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
407	X-3945-909-1	ROLLER ASSY, HC	415	4-623-699-01	SCREW (3X5)	
408	X-3942-947-1	ARM ASSY, HC	*416	3-954-049-01	RETAINER, WORM WHEEL	
409	3-321-393-01	WASHER, STOPPER	417	X-3945-777-1	GROUND(F) ASSY, SHAFT	
410	3-954-024-03	HOLDER, MOTOR	* 418	3-958-047-01	COVER, MOTOR HOLDER	
411	3-733-395-01	GEAR (CAM), WORM	M904	A-7048-853-A	DRUM ASSY DGH-0D8A-R	
412	3-962-295-01	RUBBER, JOINT	M905	8-835-499-01	MOTOR, DC SCE-0501A	
413	3-732-817-01	SCREW (2X4.5), TAPPING	M906	X-3942-946-1	MOTOR ASSY, CAM	
414	3-954-023-01	WHEEL, CAM WORM				

5-1-10. Video 8 MECHANISM DECK ASSEMBLY-2



Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
451	X-3942-954-1	TABLE (S) ASSY, REEL	474	X-3943-162-1	BASE ASSY, PENDULUM	
452	X-3942-953-2	TABLE (T) ASSY, REEL	475	3-954-059-01	GEAR, PENDULUM DRIVING	
453	3-669-465-01	WASHER (1.5), STOPPER	476	3-954-321-01	BEARING, PENDULUM DRIVING	
454	X-3943-161-3	BRAKE (T) ASSY	477	3-726-829-01	WASHER, STOPPER	
455	3-953-978-01	SPRING, TENSION	478	X-3942-951-1	GEAR ASSY, PENDULUM	
456	3-954-071-01	ARM, BRAKE (S)	479	3-954-093-01	SPACER, TG7	
457	3-954-085-01	SPRING, TENSION	480	3-953-975-01	CLAW, S TAKE-UP	
458	X-3942-956-1	BAND ASSY, TENSION REGULATOR	* 481	3-953-974-01	ARM, S TAKE-UP	
459	3-726-884-01	FLANGE, UPPER, TG2	482	3-956-366-01	SPRING, TORSION	
460	3-943-670-02	ROLLER, TG2	483	3-954-100-01	ARM, TENSION REGULATOR SUB	
461	3-726-885-01	SLEEVE, TG2	484	3-953-973-01	ARM, PENDULUM COMPULSION	
462	3-726-882-02	FLANGE, LOWER, TG2	* 485	3-954-007-01	LEVER, SLIDE PLATE DRIVING	
463	3-954-001-01	SPRING, COMPRESSION	* 486	3-954-009-01	LEVER, PINCH DRIVING	
464	X-3943-111-1	BRAKE (T) ASSY, SOFT	487	3-954-016-01	LEVER, TG7 DRIVING	
465	X-3942-955-1	TENSION REGULATOR ASSY	488	3-953-972-01	PLATE, SLIDE	
466	3-954-103-01	ARM, TENSION ADJUSTMENT	489	3-954-072-01	LEVER, BRAKE (S) DRIVING	
467	3-954-090-01	CATCHER (S)	490	3-954-096-01	SCREW, TG7 HEIGHT ADJUSTMENT	
468	3-954-091-01	CATCHER (T)	491	3-738-212-11	RETAINER, THRUST, REEL TABLE	
469	3-954-285-01	SCREW (M1.4X0.2)	492	X-3945-776-1	ARM(F) ASSY, TG7	
470	X-3942-945-1	ARM ASSY, PINCH	493	3-954-003-01	SPRING (TG7), TORSION	
471	3-954-105-01	SPRING (PINCH DRIVING)	494	3-732-817-01	SCREW (2X4.5), TAPPING	
* 472	3-954-063-01	PLATE, RELEASE, REEL LOCK	495	3-954-074-01	SPRING, TENSION	
473	3-955-142-01	SPRING, TENSION				

5-1-11. Video 8 MECHANISM DECK ASSEMBLY-3



Ref. No.	Part No.	Description	Remarks
* 501	X-3946-740-1	CHASSIS(F2) ASSY, MECHANICAL	
502	A-7040-338-A	COASTER (S) BLOCK ASSY	
503	X-3944-648-1	ROLLER ASSY (3), TG3	
504	3-947-504-01	SCREW (M1.2X2)	
505	A-7040-470-A	COASTER (T) BLOCK ASSY (2)	
506	X-3941-756-1	ROLLER ASSY (2), TG6	
507	3-956-649-01	SPRING, LEAF, COASTER	
508	3-726-829-01	WASHER, STOPPER	
509	X-3943-015-1	BASE ASSY, ROLLER	
510	X-3944-994-1	ROLLER ASSY, IMPEDANCE	
511	3-954-284-01	SPRING, TENSION	
512	3-953-983-01	GEAR, FL PULLEY	
513	3-954-079-01	BELT (FL), TIMING	
514	3-953-979-01	ARM, FL SELECTION	
515	3-953-982-01	SPRING, TENSION	
516	3-953-980-01	GEAR, FL SELECTION	
517	3-953-981-01	GEAR (DRIVING), FL PULLEY	
518	1-692-498-11	SWITCH, ROTARY	
519	3-954-061-01	GEAR, REEL RELAY	
520	3-953-986-01	BELT, TIMING	
521	X-3942-949-1	ARM (S) ASSY, LOADING	
* 522	A-7072-921-A	MD-590 BOARD, COMPLETE	
523	3-953-998-01	SPRING (S), TORSION	
524	3-953-991-01	GEAR (S), LOADING	
525	X-3942-948-1	ARM (T) ASSY, LOADING	
526	3-954-000-01	SPRING (T), TORSION	
527	3-953-992-01	GEAR (T), LOADING	
528	3-954-050-01	CAM, MAIN	
* 529	3-954-014-01	LEVER, LOADING DRIVING	
530	3-954-015-01	GEAR, CAM RELAY	
531	X-3942-962-1	BASE ASSY, PULLEY	
532	X-3943-016-1	PULLEY ASSY, BELT	
533	1-750-620-11	CONNECTOR (MM8 MD)	
534	3-954-102-02	FLANGE, REEL RELAY	
535	3-953-985-01	HOLDER, ST SENSOR	
536	3-954-638-01	HOLDER (S), PUSH SWITCH	
537	3-954-639-01	HOLDER (T), PUSH SWITCH	
538	3-732-817-01	SCREW (2X4.5), TAPPING	
539	3-954-323-01	ROLLER, LOADING	

CP-76

5-2. ELECTRICAL PARTS LIST

Note:

When indicating parts by reference number, please include the board name.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
*	A-7066-975-A	CP-76 (VC) BOARD, COMPLETE *****	(AS,B,MN,NP,NR,VC)	C336	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
				C337	1-163-235-11	CERAMIC CHIP 22PF	5% 50V
				C338	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
				C347	1-163-251-11	CERAMIC CHIP 100PF	(AS,B,MN,NP,NR,VC) 5% 50V
				C348	1-163-251-11	CERAMIC CHIP 100PF	(AS,B,MN,NP,NR,VC) 5% 50V
*	A-7066-979-A	CP-76 (UX) BOARD, COMPLETE (UX) ***** (Ref.No.: 5,000 Series)	(AS,B,MN,NP,NR,VC)	C361	1-163-251-11	CERAMIC CHIP 100PF	(AS,B,MN,NP,NR,VC) 5% 50V
				C363	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C364	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C365	1-163-009-11	CERAMIC CHIP 0.001uF	10% 50V
				C367	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C368	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C369	1-163-038-00	CERAMIC CHIP 0.1uF	(AS,B,MN,NP,NR,VC) 25V
				C370	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C371	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C375	1-163-110-00	CERAMIC CHIP 51PF	(AS,B,MN,NP,NR,VC) 5% 50V
				C376	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C377	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C378	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				C379	1-163-038-00	CERAMIC CHIP 0.1uF	25V
				< CONNECTOR >			
				CN301	1-774-489-41	CONNECTOR, FFC/FPC 23P	
				CN302	1-695-338-11	CONNECTOR, FFC/FPC 15P	
				< DIODE >			
				D301	8-719-801-78	DIODE 1SS184	(AS,B,MN,NP,NR,VC)
				D302	8-719-109-97	DIODE RD6.8ES-B2	(AS,B,MN,NP,NR,VC)
				D303	8-719-109-97	DIODE RD6.8ES-B2	
				D304	8-719-109-97	DIODE RD6.8ES-B2	(AS,B,MN,NP,NR,VC)
				D305	8-719-109-97	DIODE RD6.8ES-B2	
				D306	8-719-109-97	DIODE RD6.8ES-B2	
				D307	8-719-109-97	DIODE RD6.8ES-B2	
				D308	8-719-109-97	DIODE RD6.8ES-B2	
				D309	8-719-109-97	DIODE RD6.8ES-B2	
				D310	8-719-109-97	DIODE RD6.8ES-B2	(AS,B,MN,NP,NR,VC)
				D311	8-719-109-97	DIODE RD6.8ES-B2	(AS,B,MN,NP,NR,VC)
				D312	8-719-109-97	DIODE RD6.8ES-B2	
				D313	8-719-109-97	DIODE RD6.8ES-B2	
				D314	8-719-110-31	DIODE RD12ES-B2	
				D315	8-719-109-97	DIODE RD6.8ES-B2	
				D316	8-719-109-97	DIODE RD6.8ES-B2	(AS,B,MN,NP,NR,VC)
				D317	8-719-110-31	DIODE RD12ES-B2	
				D318	8-719-109-97	DIODE RD6.8ES-B2	
				D319	8-719-109-97	DIODE RD6.8ES-B2	(AS,B,MN,NP,NR,VC)
				D320	8-719-109-97	DIODE RD6.8ES-B2	
*	A-7066-979-A	CP-76 (UX) BOARD, COMPLETE (UX) ***** (Ref.No.: 5,000 Series)	(AS,B,MN,NP,NR,VC)	C330	1-126-967-11	ELECT	20% 10V
				C302	1-126-967-11	ELECT	20% 10V
				C303	1-126-967-11	ELECT	20% 10V
				C304	1-126-967-11	ELECT	20% 10V
				C305	1-164-232-11	CERAMIC CHIP 0.01uF	50V
				C306	1-163-245-11	CERAMIC CHIP 56PF	5% 50V
				C307	1-126-967-11	ELECT	20% 10V
				C308	1-126-967-11	ELECT	20% 10V
				C309	1-164-232-11	CERAMIC CHIP 0.01uF	50V
				C310	1-164-232-11	CERAMIC CHIP 0.01uF	50V
				C313	1-126-967-11	ELECT	20% 10V
				C314	1-126-967-11	ELECT	20% 10V
				C315	1-126-967-11	ELECT	(AS,B,MN,NP,NR,VC) 20% 10V
				C316	1-163-104-00	CERAMIC CHIP 30PF	(AS,B,MN,NP,NR,VC) 5% 50V
				C317	1-164-232-11	CERAMIC CHIP 0.01uF	50V
*	A-7066-979-A	CP-76 (UX) BOARD, COMPLETE (UX) ***** (Ref.No.: 5,000 Series)	(AS,B,MN,NP,NR,VC)	C318	1-126-967-11	ELECT	20% 10V
				C319	1-126-967-11	ELECT	20% 10V
				C320	1-126-967-11	ELECT	20% 10V
				C321	1-126-967-11	ELECT	(AS,B,MN,NP,NR,VC) 20% 10V
				C322	1-126-967-11	ELECT	20% 10V
				C323	1-164-232-11	CERAMIC CHIP 0.01uF	50V
				C324	1-126-965-11	ELECT	20% 50V
				C325	1-164-232-11	CERAMIC CHIP 0.01uF	(AS,B,MN,NP,NR,VC) 50V
				C326	1-126-967-11	ELECT	20% 10V
				C327	1-126-967-11	ELECT	20% 10V
				C328	1-163-005-11	CERAMIC CHIP 470PF	10% 50V
				C329	1-164-232-11	CERAMIC CHIP 0.01uF	(AS,B,MN,NP,NR,VC) 50V
				C330	1-164-232-11	CERAMIC CHIP 0.01uF	50V
				C331	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C332	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
*	A-7066-979-A	CP-76 (UX) BOARD, COMPLETE (UX) ***** (Ref.No.: 5,000 Series)	(AS,B,MN,NP,NR,VC)	C333	1-163-251-11	CERAMIC CHIP 100PF	(AS,B,MN,NP,NR,VC) 5% 50V
				C334	1-163-251-11	CERAMIC CHIP 100PF	5% 50V
				C335	1-164-161-11	CERAMIC CHIP 0.0022uF	(AS,B,MN,NP,NR,VC) 10% 100V

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: μ F
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
COILS
uH: μ H
SEMICONDUCTORS
In each case, u: μ , for example:
uA..., μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
D321	8-719-109-97	DIODE RD6.8ES-B2		Q301	8-729-010-05	TRANSISTOR MSB709-RT1	
D322	8-719-109-97	DIODE RD6.8ES-B2		Q302	8-729-010-25	TRANSISTOR MSD601-RT1	
D323	8-719-109-97	DIODE RD6.8ES-B2		Q303	8-729-010-25	TRANSISTOR MSD601-RT1	
D324	8-719-109-97	DIODE RD6.8ES-B2		Q304	8-729-010-25	TRANSISTOR MSD601-RT1	
D325	8-719-109-97	DIODE RD6.8ES-B2		Q305	8-729-010-25	TRANSISTOR MSD601-RT1	(AS,B,MN,NP,NR,VC)
D326	8-719-109-97	DIODE RD6.8ES-B2		Q306	8-729-010-05	TRANSISTOR MSB709-RT1	(AS,B,MN,NP,NR,VC)
D327	8-719-109-97	DIODE RD6.8ES-B2		Q307	8-729-010-25	TRANSISTOR MSD601-RT1	(AS,B,MN,NP,NR,VC)
D328	8-719-109-97	DIODE RD6.8ES-B2		Q308	8-729-010-25	TRANSISTOR MSD601-RT1	(AS,B,MN,NP,NR,VC)
D329	8-719-109-97	DIODE RD6.8ES-B2		Q309	8-729-010-25	TRANSISTOR MSD601-RT1	(AS,B,MN,NP,NR,VC)
D330	8-719-109-97	DIODE RD6.8ES-B2 (AS,B,MN,NP,NR,VC)		Q310	8-729-010-05	TRANSISTOR MSB709-RT1	(AS,B,MN,NP,NR,VC)
D331	8-719-109-97	DIODE RD6.8ES-B2 (AS,B,MN,NP,NR,VC)		Q311	8-729-010-05	TRANSISTOR MSB709-RT1	(AS,B,MN,NP,NR,VC)
D332	8-719-109-97	DIODE RD6.8ES-B2					
D333	8-719-109-97	DIODE RD6.8ES-B2					
D334	8-719-109-97	DIODE RD6.8ES-B2					
D335	8-719-109-97	DIODE RD6.8ES-B2 (AS,B,MN,NP,NR,VC)					
D336	8-719-911-19	DIODE 1S3119					
D337	8-719-118-28	DIODE RD9.1EW-T2					
		< FILTER >				< RESISTOR >	
FL301	1-236-163-11	ENCAPSULATED COMPONENT		R301	1-216-049-91	METAL GLAZE 1K	5% 1/10W
FL302	1-236-163-11	ENCAPSULATED COMPONENT		R302	1-216-043-91	METAL GLAZE 560	5% 1/10W
FL303	1-236-163-11	ENCAPSULATED COMPONENT		R303	1-216-295-91	CONDUCTOR, CHIP(2012) (UX)	
FL304	1-236-163-11	ENCAPSULATED COMPONENT		R305	1-216-081-00	METAL CHIP 22K	5% 1/10W
FL305	1-236-163-11	ENCAPSULATED COMPONENT		R306	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
FL306	1-236-163-11	ENCAPSULATED COMPONENT		R307	1-216-049-91	METAL GLAZE 1K	5% 1/10W
FL307	1-236-163-11	ENCAPSULATED COMPONENT (AS,B,MN,NP,NR,VC)		R308	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
FL308	1-236-163-11	ENCAPSULATED COMPONENT		R309	1-216-047-91	METAL GLAZE 820	5% 1/10W
		< IC >		R310	1-216-059-00	METAL CHIP 2.7K	5% 1/10W
IC302	8-759-009-06	IC MC14052BF		R311	1-216-049-91	METAL GLAZE 1K	5% 1/10W
IC303	8-759-504-46	IC PQ05RF1		R313	1-216-295-91	CONDUCTOR, CHIP(2012) (UX)	
IC305	8-759-009-07	IC MC14053BFEL (AS,B,MN,NP,NR,VC)		R314	1-216-049-91	METAL GLAZE 1K	5% 1/10W
IC306	8-759-009-07	IC MC14053BFEL (AS,B,MN,NP,NR,VC)		R315	1-216-055-00	METAL CHIP 1.8K	5% 1/10W
IC307	8-759-009-07	IC MC14053BFEL (AS,B,MN,NP,NR,VC)		R316	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
		< JACK >		R318	1-216-081-00	METAL CHIP 22K	5% 1/10W
IC308	8-759-100-96	IC uPC4558G2		R319	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
IC309	8-759-100-96	IC uPC4558G2 (AS,B,MN,NP,NR,VC)		R320	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
IC310	8-759-262-03	IC MC14577CFEL		R322	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
		< JUMPER RESISTOR >		R323	1-216-081-00	METAL CHIP 22K	5% 1/10W
J305	1-561-534-00	SOCKET, PIN 21P(LINE-1/TV)		R324	1-216-025-91	METAL GLAZE 100	5% 1/10W
J306	1-561-534-00	SOCKET, PIN 21P(DECODER/LINE-3)		R325	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
JR001	1-216-295-91	CONDUCTOR, CHIP(2012)		R326	1-216-073-00	METAL CHIP 10K	5% 1/10W
JR002	1-216-295-91	CONDUCTOR, CHIP(2012)		R327	1-216-041-00	METAL CHIP 470	5% 1/10W
JR003	1-216-295-91	CONDUCTOR, CHIP(2012)		R328	1-216-073-00	METAL CHIP 10K	5% 1/10W
JR005	1-216-295-91	CONDUCTOR, CHIP(2012)					
JR006	1-216-295-91	CONDUCTOR, CHIP(2012)		R329	1-216-069-00	METAL CHIP 6.8K	5% 1/10W
JR007	1-216-295-91	CONDUCTOR, CHIP(2012)		R330	1-216-105-91	METAL GLAZE 220K	5% 1/10W
		< COIL >		R331	1-216-101-00	METAL CHIP 150K	5% 1/10W
L301	1-410-516-11	INDUCTOR 39uH		R332	1-216-109-00	METAL CHIP 330K	5% 1/10W
L302	1-410-470-11	INDUCTOR 10uH (AS,B,MN,NP,NR,VC)		R333	1-216-073-00	METAL CHIP 10K	5% 1/10W
L303	1-410-470-11	INDUCTOR 10uH		R334	1-216-093-00	METAL CHIP 68K	5% 1/10W
L304	1-410-470-11	INDUCTOR 10uH		R335	1-216-073-00	METAL CHIP 10K	5% 1/10W
L305	1-410-482-31	INDUCTOR 100uH		R336	1-216-095-00	METAL CHIP 82K	5% 1/10W
L306	1-410-482-31	INDUCTOR 100uH		R337	1-216-121-91	METAL GLAZE 1M	5% 1/10W
L307	1-410-470-11	INDUCTOR 10uH		R338	1-216-073-00	METAL CHIP 10K	5% 1/10W
				R339	1-216-073-00	METAL CHIP 10K	5% 1/10W
							(AS,B,MN,NP,NR,VC)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R340	1-216-043-91	METAL GLAZE	5%	*	A-7073-109-A	FL-79 BOARD, COMPLETE ***** (Ref.No.: 6,000 Series)	
R341	1-216-073-00	METAL CHIP	5%				
R342	1-216-073-00	METAL CHIP	5%				
R343	1-216-043-91	METAL GLAZE	(AS,B,MN,NP,NR,VC) 5%		3-947-530-01	HOLDER, TERMINAL, S	
R344	1-216-043-91	METAL GLAZE	5%			< CAPACITOR >	
R345	1-216-093-00	METAL CHIP	5%	C201	1-164-232-11	CERAMIC CHIP	0.01uF 50V
R346	1-216-042-00	METAL CHIP	5%	C222	1-163-009-11	CERAMIC CHIP	0.001uF 10%
R347	1-216-089-91	METAL GLAZE	5%	C223	1-163-038-00	CERAMIC CHIP	0.1uF 25V
R348	1-216-053-00	METAL CHIP	5%			< CONNECTOR >	
R349	1-216-025-91	METAL GLAZE	(AS,B,MN,NP,NR,VC) 5%	CN201	1-565-777-11	CONNECTOR, BOARD TO BOARD 8P	
R350	1-216-089-91	METAL GLAZE	(AS,B,MN,NP,NR,VC) 5%	CN202	1-568-788-21	PIN, CONNECTOR 11P	
R351	1-216-025-91	METAL GLAZE	5%			< JACK >	
R352	1-216-041-00	METAL CHIP	5%	CNJ201	1-566-850-31	CONNECTOR, (S) TERMINAL 4P	
R353	1-216-022-00	METAL CHIP	5%	CNJ202	1-695-865-11	JACK, PIN 3P	
R354	1-216-049-91	METAL GLAZE	(AS,B,MN,NP,NR,VC) 5%			< DIODE >	
R355	1-216-295-91	CONDUCTOR, CHIP(2012)		D201	8-719-970-67	DIODE SLR-34MCA49	
R356	1-216-041-00	METAL CHIP	5%	D211	8-719-422-62	DIODE MA8062-L-TX	
R357	1-216-295-91	CONDUCTOR, CHIP(2012)	(AS,B,MN,NP,NR,VC) 5%	D212	8-719-421-59	DIODE MA3075WA-(TX)	
R358	1-216-295-91	CONDUCTOR, CHIP(2012)		D213	8-719-421-59	DIODE MA3075WA-(TX)	
R359	1-216-295-91	CONDUCTOR, CHIP(2012)		D214	8-719-421-59	DIODE MA3075WA-(TX)	
R360	1-216-295-91	CONDUCTOR, CHIP(2012)		D215	8-719-421-59	DIODE MA3075WA-(TX)	
R361	1-216-041-00	METAL CHIP	5%	D216	8-719-421-59	DIODE MA3075WA-(TX)	
R362	1-216-022-00	METAL CHIP	(AS,B,MN,NP,NR,VC) 5%	D222	8-719-404-49	DIODE MA111	
R363	1-216-295-91	CONDUCTOR, CHIP(2012)				< FILTER >	
R364	1-216-295-91	CONDUCTOR, CHIP(2012)		FL201	1-236-163-11	ENCAPSULATED COMPONENT	
R365	1-216-295-91	CONDUCTOR, CHIP(2012)		FL202	1-236-163-11	ENCAPSULATED COMPONENT	
R366	1-216-022-00	METAL CHIP	5%			< IC >	
R367	1-216-295-91	CONDUCTOR, CHIP(2012)		IC202	8-749-011-05	IC GP1U28X	
R368	1-216-295-91	CONDUCTOR, CHIP(2012)	(AS,B,MN,NP,NR,VC) 5%			< JUMPER RESISTOR >	
R369	1-216-022-00	METAL CHIP	5%	JR201	1-216-295-00	METAL CHIP	0 5%
R370	1-216-295-91	CONDUCTOR, CHIP(2012)	(AS,B,MN,NP,NR,VC) 5%	JR202	1-216-295-00	METAL CHIP	0 5%
R371	1-216-295-91	CONDUCTOR, CHIP(2012)	(AS,B,MN,NP,NR,VC) 5%			< RESISTOR >	
R372	1-216-295-91	CONDUCTOR, CHIP(2012)		R201	1-216-031-00	METAL CHIP	180 5%
R373	1-216-295-91	CONDUCTOR, CHIP(2012)		R204	1-216-057-00	METAL CHIP	2.2K 5%
R374	1-216-295-91	CONDUCTOR, CHIP(2012)		R205	1-216-057-00	METAL CHIP	2.2K 5%
R376	1-216-295-91	CONDUCTOR, CHIP(2012)		R212	1-216-022-00	METAL CHIP	75 5%
R377	1-216-295-91	CONDUCTOR, CHIP(2012)	(AS,B,MN,NP,NR,VC) 5%	R213	1-216-022-00	METAL CHIP	75 5%
R378	1-216-295-91	CONDUCTOR, CHIP(2012)		R214	1-216-022-00	METAL CHIP	75 5%
R379	1-216-295-91	CONDUCTOR, CHIP(2012)	(AS,B,MN,NP,NR,VC) 5%	R215	1-216-105-91	METAL GLAZE	220K 5%
R380	1-216-022-00	METAL CHIP	5%	R216	1-216-105-91	METAL GLAZE	220K 5%
R381	1-216-095-00	METAL CHIP	(AS,B,MN,NP,NR,VC) 5%	R221	1-216-057-00	METAL CHIP	2.2K 5%
R382	1-216-295-91	CONDUCTOR, CHIP(2012)	(UX) 5%	R222	1-216-057-00	METAL CHIP	2.2K 5%
R383	1-216-041-00	METAL CHIP	5%			< SWITCH >	
R384	1-216-059-00	METAL CHIP	5%	R223	1-216-295-00	METAL CHIP	0 5%
R385	1-216-081-00	METAL CHIP	5%	R224	1-216-295-00	METAL CHIP	0 5%
R387	1-216-295-91	CONDUCTOR, CHIP(2012)					
R389	1-216-295-91	CONDUCTOR, CHIP(2012)		S201	1-571-977-11	SWITCH, TACTIL (ON/STANDBY)	
R391	1-216-295-91	CONDUCTOR, CHIP(2012)		S202	1-571-977-11	SWITCH, TACTIL (Video 8 EJECT)	
R393	1-216-295-91	CONDUCTOR, CHIP(2012)		S205	1-571-977-11	SWITCH, TACTIL (Video 8 HIGH SPEED REWIND)	
R395	1-216-033-00	METAL CHIP	5%				
R396	1-216-033-00	METAL CHIP	5%	S207	1-571-977-11	SWITCH, TACTIL (Video 8)	
R397	1-216-033-00	METAL CHIP	5%				
R398	1-216-033-00	METAL CHIP	5%				
R399	1-216-041-00	METAL CHIP	5%				
R400	1-216-041-00	METAL CHIP	5%				

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* A-7066-980-A	FR-113 (UX) BOARD, COMPLETE	***** (Ref.No.: 6,000 Series)					
* 3-960-787-01	HOLDER, FL	< BUZZER >		JR001	1-216-296-00	METAL CHIP	0 5% 1/8W
				JR002	1-216-295-00	METAL CHIP	0 5% 1/10W
				JR003	1-216-296-00	METAL CHIP	0 5% 1/8W
				JR004	1-216-296-00	METAL CHIP	0 5% 1/8W
				JR005	1-216-295-00	METAL CHIP	0 5% 1/10W
BZ001	1-529-104-11	BUZZER, PIEZOELECTRIC		JR006	1-216-295-00	METAL CHIP	0 5% 1/10W
		< CAPACITOR >		JR007	1-216-296-00	METAL CHIP	0 5% 1/8W
C001	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	JR008	1-216-295-00	METAL CHIP	0 5% 1/10W
C002	1-107-682-11	CERAMIC CHIP 1uF	10% 16V	JR009	1-216-295-00	METAL CHIP	0 5% 1/10W
C003	1-163-234-11	CERAMIC CHIP 20PF	5% 50V	JR010	1-216-295-00	METAL CHIP	0 5% 1/8W
C004	1-163-235-11	CERAMIC CHIP 22PF	5% 50V	JR011	1-216-296-00	METAL CHIP	0 5% 1/8W
C006	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	JR016	1-216-296-00	METAL CHIP	0 5% 1/8W
C007	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V	JR017	1-216-296-00	METAL CHIP	0 5% 1/8W
C008	1-164-232-11	CERAMIC CHIP 0.01uF	50V	JR018	1-216-296-00	METAL CHIP	0 5% 1/8W
C009	1-161-494-00	CERAMIC 0.022uF	25V	JR019	1-216-296-00	METAL CHIP	0 5% 1/8W
C010	1-164-346-11	CERAMIC CHIP 1uF	16V	JR020	1-216-296-00	METAL CHIP	0 5% 1/8W
C102	1-164-346-11	CERAMIC CHIP 1uF	16V	JR021	1-216-296-00	METAL CHIP	0 5% 1/8W
C104	1-163-077-00	CERAMIC CHIP 0.1uF	10% 25V	JR022	1-216-295-00	METAL CHIP	0 5% 1/10W
C108	1-161-494-00	CERAMIC 0.022uF	25V	JR023	1-216-296-00	METAL CHIP	0 5% 1/8W
		< CONNECTOR >		JR024	1-216-296-00	METAL CHIP	0 5% 1/8W
CN001	1-774-471-41	CONNECTOR, FFC/FPC 5P		JR026	1-216-296-00	METAL CHIP	0 5% 1/8W
CN002	1-774-494-41	CONNECTOR, FFC/FPC 28P		JR027	1-216-296-00	METAL CHIP	0 5% 1/8W
CN101	1-568-669-11	CONNECTOR, BOARD TO BOARD 8P		JR028	1-216-296-00	METAL CHIP	0 5% 1/8W
* CN104	1-695-328-11	PIN, CONNECTOR (PC BOARD) 5P		JR029	1-216-295-00	METAL CHIP	0 5% 1/10W
		< DIODE >					
D001	8-719-210-33	DIODE EC10DS2		R001	1-216-222-00	METAL GLAZE	10K 5% 1/8W
D151	8-719-940-XX	LED SLR-34VCA49		R002	1-216-222-00	METAL GLAZE	10K 5% 1/8W
D152	8-719-940-XX	LED SLR-34VCA49		R004	1-216-198-91	METAL GLAZE	1K 5% 1/8W
D153	8-719-946-30	LED SLR34DC3		R008	1-216-222-00	METAL GLAZE	10K 5% 1/8W
D154	8-719-970-67	LED SLR-34MCA49		R009	1-249-428-11	CARBON	8.2K 5% 1/4W F
D155	8-719-970-67	LED SLR-34MCA49		R010	1-216-190-00	METAL GLAZE	470 5% 1/8W
D161	8-719-970-67	LED SLR-34MCA49		R011	1-216-190-00	METAL GLAZE	470 5% 1/8W
D162	8-719-940-XX	LED SLR-34VCA49		R012	1-216-073-00	METAL CHIP	10K 5% 1/10W
D163	8-719-940-XX	LED SLR-34VCA49		R013	1-216-041-00	METAL CHIP	470 5% 1/10W
D164	8-719-970-67	LED SLR-34MCA49		R014	1-216-041-00	METAL CHIP	470 5% 1/10W
D165	8-719-946-30	LED SLR34DC3		R015	1-216-113-00	METAL CHIP	470K 5% 1/10W
D166	8-719-940-XX	LED SLR-34VCA49		R016	1-216-222-00	METAL GLAZE	10K 5% 1/8W
D168	8-719-946-30	LED SLR34DC3		R017	1-216-073-00	METAL CHIP	10K 5% 1/10W
D169	8-719-946-30	LED SLR34DC3		R018	1-216-073-00	METAL CHIP	10K 5% 1/10W
D170	8-719-940-XX	LED SLR-34VCA49		R019	1-216-222-00	METAL GLAZE	10K 5% 1/8W
D171	8-719-946-30	LED SLR34DC3		R020	1-249-417-11	CARBON	1K 5% 1/4W F
D172	8-719-970-67	LED SLR-34MCA49		R021	1-216-073-00	METAL CHIP	10K 5% 1/10W
D173	8-719-970-67	LED SLR-34MCA49		R022	1-216-198-91	METAL GLAZE	1K 5% 1/8W
		< FILTER >		R023	1-216-198-91	METAL GLAZE	1K 5% 1/8W
				R024	1-249-417-11	CARBON	1K 5% 1/4W F
FL101	1-517-321-11	TUBE, FLUORESCENT INDICATOR		R026	1-249-429-11	CARBON	10K 5% 1/4W
		< IC >		R027	1-216-041-00	METAL CHIP	470 5% 1/10W
IC001	8-759-460-56	IC MB89096RPF-G-235-BND		R028	1-216-041-00	METAL CHIP	470 5% 1/10W
IC002	8-759-279-61	IC ST93CS66B1		R029	1-216-041-00	METAL CHIP	470 5% 1/10W
IC101	8-759-448-24	IC NUJ3718G(TE2)		R030	1-216-073-00	METAL CHIP	10K 5% 1/10W
				R031	1-216-073-00	METAL CHIP	10K 5% 1/10W
				R032	1-216-222-00	METAL GLAZE	10K 5% 1/8W
				R033	1-216-073-00	METAL CHIP	10K 5% 1/10W
				R034	1-216-073-00	METAL CHIP	10K 5% 1/10W
				R035	1-249-417-11	CARBON	1K 5% 1/4W F
				R036	1-216-049-00	METAL CHIP	1K 5% 1/10W
				R037	1-249-417-11	CARBON	1K 5% 1/4W F
				R038	1-249-417-11	CARBON	1K 5% 1/4W F
				R039	1-249-417-11	CARBON	1K 5% 1/4W F
				R040	1-216-190-00	METAL GLAZE	470 5% 1/8W

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C071	1-163-037-11	CERAMIC CHIP	0.022uF	C233	1-126-962-11	ELECT	3.3uF
C073	1-162-587-11	CERAMIC CHIP	0.039uF	C234	1-126-961-11	ELECT	2.2uF
C075	1-164-232-11	CERAMIC CHIP	0.01uF	C235	1-115-870-11	ELECT	0.47uF
C077	1-164-004-11	CERAMIC CHIP	0.1uF	C236	1-164-232-11	CERAMIC CHIP	0.01uF
C078	1-164-489-11	CERAMIC CHIP	0.22uF	C237	1-126-961-11	ELECT	2.2uF
C083	1-164-232-11	CERAMIC CHIP	0.01uF	C238	1-126-967-11	ELECT	47uF
C084	1-164-232-11	CERAMIC CHIP	0.01uF	C239	1-115-869-11	ELECT	0.33uF
C085	1-163-009-11	CERAMIC CHIP	0.001uF	C240	1-163-017-00	CERAMIC CHIP	0.0047uF
C086	1-163-037-11	CERAMIC CHIP	0.022uF	C241	1-164-232-11	CERAMIC CHIP	0.01uF
C087	1-163-009-11	CERAMIC CHIP	0.001uF	C242	1-164-232-11	CERAMIC CHIP	0.01uF
C088	1-163-037-11	CERAMIC CHIP	0.022uF	C243	1-164-232-11	CERAMIC CHIP	0.01uF
C089	1-163-037-11	CERAMIC CHIP	0.022uF	C244	1-164-232-11	CERAMIC CHIP	0.01uF
C090	1-104-760-11	CERAMIC CHIP	0.047uF	C245	1-164-232-11	CERAMIC CHIP	0.01uF
C091	1-164-232-11	CERAMIC CHIP	0.01uF	C246	1-126-961-11	ELECT	2.2uF
C092	1-164-489-11	CERAMIC CHIP	0.22uF	C260	1-126-960-11	ELECT	1uF
C093	1-164-489-11	CERAMIC CHIP	0.22uF	C261	1-126-960-11	ELECT	1uF
C094	1-163-009-11	CERAMIC CHIP	0.001uF	C262	1-163-121-00	CERAMIC CHIP	150PF
C095	1-163-038-00	CERAMIC CHIP	0.1uF	C263	1-128-551-11	ELECT	22uF
C096	1-126-933-11	ELECT	100uF	C301	1-126-967-11	ELECT	47uF
C097	1-126-964-11	ELECT	10uF	C302	1-164-232-11	CERAMIC CHIP	0.01uF
C098	1-126-964-11	ELECT	10uF	C303	1-126-967-11	ELECT	47uF
C099	1-164-232-11	CERAMIC CHIP	0.01uF	C304	1-164-232-11	CERAMIC CHIP	0.01uF
C101	1-164-232-11	CERAMIC CHIP	0.01uF	C305	1-164-232-11	CERAMIC CHIP	0.01uF
C102	1-164-232-11	CERAMIC CHIP	0.01uF	C307	1-126-967-11	ELECT	47uF
C103	1-164-232-11	CERAMIC CHIP	0.01uF	C314	1-163-251-11	CERAMIC CHIP	100PF
C104	1-164-232-11	CERAMIC CHIP	0.01uF	C315	1-164-232-11	CERAMIC CHIP	0.01uF
C105	1-163-038-00	CERAMIC CHIP	0.1uF	C336	1-164-232-11	CERAMIC CHIP	0.01uF
C106	1-163-038-00	CERAMIC CHIP	0.1uF	C387	1-126-961-11	ELECT	2.2uF
C107	1-128-551-11	ELECT	22uF	C388	1-128-551-11	ELECT	22uF
C108	1-164-232-11	CERAMIC CHIP	0.01uF	C389	1-163-009-11	CERAMIC CHIP	0.001uF
C109	1-126-925-11	ELECT	470uF	C396	1-163-017-00	CERAMIC CHIP	0.0047uF
C110	1-124-584-00	ELECT	100uF	C397	1-164-161-11	CERAMIC CHIP	0.0022uF
C201	1-126-933-11	ELECT	100uF	C398	1-164-232-11	CERAMIC CHIP	0.01uF
C202	1-126-961-11	ELECT	2.2uF	C399	1-126-967-11	ELECT	47uF
C203	1-126-961-11	ELECT	2.2uF	C410	1-164-004-11	CERAMIC CHIP	0.1uF
C204	1-164-232-11	CERAMIC CHIP	0.01uF	C501	1-126-933-11	ELECT	100uF
C205	1-164-232-11	CERAMIC CHIP	0.01uF	C502	1-164-232-11	CERAMIC CHIP	0.01uF
C206	1-126-966-11	ELECT	33uF	C503	1-163-235-11	CERAMIC CHIP	22PF
C207	1-126-966-11	ELECT	33uF	C504	1-163-237-11	CERAMIC CHIP	27PF
C208	1-164-232-11	CERAMIC CHIP	0.01uF	C505	1-163-231-11	CERAMIC CHIP	15PF
C209	1-126-960-11	ELECT	1uF	C506	1-163-227-11	CERAMIC CHIP	10PF
C211	1-126-933-11	ELECT	100uF	C509	1-163-237-11	CERAMIC CHIP	27PF
C212	1-126-963-11	ELECT	4.7uF	C510	1-163-231-11	CERAMIC CHIP	15PF
C213	1-126-960-11	ELECT	1uF	C511	1-163-229-11	CERAMIC CHIP	12PF
C215	1-163-017-00	CERAMIC CHIP	0.0047uF	C512	1-163-127-00	CERAMIC CHIP	270PF
C217	1-115-869-11	ELECT	0.33uF	C513	1-127-515-11	ELECT(SOLID)	47uF
C219	1-126-967-11	ELECT	47uF	C514	1-164-232-11	CERAMIC CHIP	0.01uF
C220	1-126-961-11	ELECT	2.2uF	C515	1-163-136-00	CERAMIC CHIP	620PF
C221	1-164-232-11	CERAMIC CHIP	0.01uF	C516	1-163-099-00	CERAMIC CHIP	18PF
C222	1-115-870-11	ELECT	0.47uF	C517	1-164-232-11	CERAMIC CHIP	0.01uF
C223	1-126-961-11	ELECT	2.2uF	C518	1-163-038-00	CERAMIC CHIP	0.1uF
C224	1-126-962-11	ELECT	3.3uF	C519	1-164-232-11	CERAMIC CHIP	0.01uF
C225	1-128-551-11	ELECT	22uF	C520	1-164-232-11	CERAMIC CHIP	0.01uF
C226	1-164-161-11	CERAMIC CHIP	0.0022uF	C522	1-163-227-11	CERAMIC CHIP	10PF
C227	1-163-009-11	CERAMIC CHIP	0.001uF	C523	1-164-232-11	CERAMIC CHIP	0.01uF
C228	1-126-964-11	ELECT	10uF	C524	1-164-232-11	CERAMIC CHIP	0.01uF
C229	1-164-161-11	CERAMIC CHIP	0.0022uF	C525	1-164-232-11	CERAMIC CHIP	0.01uF
C230	1-164-232-11	CERAMIC CHIP	0.01uF	C526	1-164-232-11	CERAMIC CHIP	0.01uF
C231	1-163-131-00	CERAMIC CHIP	390PF	C527	1-163-227-11	CERAMIC CHIP	10PF
C232	1-128-551-11	ELECT	22uF	C528	1-163-251-11	CERAMIC CHIP	100PF

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C529	1-163-243-11	CERAMIC CHIP	47PF	50V	C598	1-126-964-11	ELECT
C530	1-163-251-11	CERAMIC CHIP	100PF	50V	C599	1-163-038-00	CERAMIC CHIP
C531	1-163-138-00	CERAMIC CHIP	750PF	50V	C600	1-164-232-11	CERAMIC CHIP
C533	1-163-038-00	CERAMIC CHIP	0.1uF	25V	C602	1-163-038-00	CERAMIC CHIP
C534	1-163-257-11	CERAMIC CHIP	180PF	50V	C603	1-163-121-00	CERAMIC CHIP
C535	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C605	1-163-259-91	CERAMIC CHIP
C536	1-163-248-11	CERAMIC CHIP	75PF	50V	C606	1-164-005-11	CERAMIC CHIP
C537	1-163-113-00	CERAMIC CHIP	68PF	50V	C607	1-126-964-11	ELECT
C538	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C608	1-126-960-11	ELECT
C539	1-163-243-11	CERAMIC CHIP	47PF	50V	C609	1-126-157-11	ELECT
C540	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C610	1-164-232-11	CERAMIC CHIP
C541	1-163-102-00	CERAMIC CHIP	24PF	50V	C611	1-126-157-11	ELECT
C542	1-163-113-00	CERAMIC CHIP	68PF	50V	C612	1-126-157-11	ELECT
C543	1-163-243-11	CERAMIC CHIP	47PF	50V	C613	1-164-004-11	CERAMIC CHIP
C544	1-163-112-00	CERAMIC CHIP	62PF	50V	C614	1-163-121-00	CERAMIC CHIP
C545	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C615	1-163-263-11	CERAMIC CHIP
C546	1-163-118-00	CERAMIC CHIP	110PF	50V	C616	1-126-154-11	ELECT
C547	1-163-241-11	CERAMIC CHIP	39PF	50V	C617	1-163-263-11	CERAMIC CHIP
C548	1-163-239-11	CERAMIC CHIP	33PF	50V	C618	1-163-096-00	CERAMIC CHIP
C549	1-163-014-00	CERAMIC CHIP	0.0027uF	50V	C619	1-126-967-11	ELECT
C551	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C620	1-163-237-11	CERAMIC CHIP
C552	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C621	1-163-038-00	CERAMIC CHIP
C553	1-126-964-11	ELECT	10uF	20%	C622	1-128-551-11	ELECT
C554	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C623	1-164-232-11	CERAMIC CHIP
C559	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C624	1-126-153-11	ELECT
C560	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C625	1-163-235-11	CERAMIC CHIP
C561	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C626	1-126-960-11	ELECT
C562	1-163-099-00	CERAMIC CHIP	18PF	50V	C627	1-126-962-11	ELECT
C563	1-163-224-11	CERAMIC CHIP	7PF	0.25PF	C628	1-126-962-11	ELECT
C565	1-126-964-11	ELECT	10uF	20%	C629	1-163-227-11	CERAMIC CHIP
C566	1-126-964-11	ELECT	10uF	20%	C630	1-126-964-11	ELECT
C567	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C631	1-163-131-00	CERAMIC CHIP
C568	1-163-231-11	CERAMIC CHIP	15PF	50V	C632	1-164-232-11	CERAMIC CHIP
C569	1-163-091-00	CERAMIC CHIP	8PF	50V	C633	1-164-232-11	CERAMIC CHIP
C570	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C634	1-163-120-00	CERAMIC CHIP
C571	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C635	1-164-232-11	CERAMIC CHIP
C572	1-164-222-11	CERAMIC CHIP	0.22uF	25V	C636	1-163-038-00	CERAMIC CHIP
C573	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C637	1-163-243-11	CERAMIC CHIP
C574	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C638	1-163-113-00	CERAMIC CHIP
C575	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C639	1-126-962-11	ELECT
C576	1-163-235-11	CERAMIC CHIP	22PF	50V	C641	1-163-243-11	CERAMIC CHIP
C577	1-163-251-11	CERAMIC CHIP	100PF	50V	C642	1-164-232-11	CERAMIC CHIP
C578	1-126-967-11	ELECT	47uF	20%	C645	1-164-232-11	CERAMIC CHIP
C579	1-126-967-11	ELECT	47uF	20%	C646	1-163-251-11	CERAMIC CHIP
C580	1-126-963-11	ELECT	4.7uF	20%	C647	1-163-121-00	CERAMIC CHIP
C581	1-163-019-00	CERAMIC CHIP	0.0068uF	50V	C648	1-163-249-11	CERAMIC CHIP
C582	1-126-960-11	ELECT	1uF	20%	C649	1-128-551-11	ELECT
C583	1-163-037-11	CERAMIC CHIP	0.022uF	10%	C650	1-126-967-11	ELECT
C584	1-124-254-00	ELECT	0.68uF	20%	C652	1-163-251-11	CERAMIC CHIP
C585	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C653	1-163-237-11	CERAMIC CHIP
C586	1-126-960-11	ELECT	1uF	20%	C654	1-126-960-11	ELECT
C587	1-126-157-11	ELECT	10uF	20%	C655	1-163-251-11	CERAMIC CHIP
C590	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C656	1-126-962-11	ELECT
C591	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C657	1-126-962-11	ELECT
C592	1-128-551-11	ELECT	22uF	20%	C659	1-164-232-11	CERAMIC CHIP
C593	1-128-551-11	ELECT	22uF	20%	C660	1-164-232-11	CERAMIC CHIP
C594	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C662	1-164-232-11	CERAMIC CHIP
C595	1-126-964-11	ELECT	10uF	20%	C663	1-163-038-00	CERAMIC CHIP
C596	1-126-962-11	ELECT	3.3uF	20%	C665	1-163-038-00	CERAMIC CHIP
C597	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C666	1-126-964-11	ELECT

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C667	1-126-962-11	ELECT	3.3uF 20%	C843	1-163-037-11	CERAMIC CHIP	0.022uF 10%
C668	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C844	1-163-809-11	CERAMIC CHIP	0.047uF 10%
C669	1-128-551-11	ELECT	22uF 20%	C845	1-163-809-11	CERAMIC CHIP	0.047uF 10%
C670	1-128-551-11	ELECT	22uF 20%	C846	1-164-004-11	CERAMIC CHIP	0.1uF 10%
C671	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C847	1-124-589-11	ELECT	47uF 20%
C672	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C848	1-104-329-11	CERAMIC CHIP	0.1uF 10%
C674	1-163-239-11	CERAMIC CHIP	33PF 50V	C849	1-104-329-11	CERAMIC CHIP	0.1uF 10%
C675	1-163-239-11	CERAMIC CHIP	33PF 50V	C850	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C676	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C851	1-126-967-11	ELECT	47uF 20%
C678	1-126-935-11	ELECT	470uF 6.3V	C852	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C679	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C854	1-163-235-11	CERAMIC CHIP	22PF 50V
C681	1-163-253-11	CERAMIC CHIP	120PF 50V	C900	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C682	1-126-964-11	ELECT	10uF 50V	C901	1-163-235-11	CERAMIC CHIP	22PF 50V
C683	1-163-038-00	CERAMIC CHIP	0.1uF 25V	C902	1-163-235-11	CERAMIC CHIP	22PF 50V
C685	1-164-004-11	CERAMIC CHIP	0.1uF 10%	C903	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C687	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C905	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C688	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C907	1-126-924-11	ELECT	330uF 20%
C689	1-163-031-11	CERAMIC CHIP	0.01uF 50V	C908	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C690	1-163-120-00	CERAMIC CHIP	130PF 50V	C909	1-163-137-00	CERAMIC CHIP	680PF 50V
C691	1-126-967-11	ELECT	47uF 20%	C911	1-163-124-00	CERAMIC CHIP	200PF 50V
C692	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C912	1-163-007-11	CERAMIC CHIP	680PF 10%
C693	1-126-964-11	ELECT	10uF 20%	< CONNECTOR >			
C694	1-163-237-11	CERAMIC CHIP	27PF 50V	CN001	1-506-477-11	PIN, CONNECTOR 12P	
C801	1-164-232-11	CERAMIC CHIP	0.01uF 50V	CN002	1-506-467-11	PIN, CONNECTOR 2P	
C802	1-126-967-11	ELECT	47uF 20%	CN003	1-506-470-11	PIN, CONNECTOR 5P	
C803	1-126-967-11	ELECT	47uF 20%	CN004	1-695-338-11	PIN, CONNECTOR (PC BOARD) 15P	
C804	1-164-004-11	CERAMIC CHIP	0.1uF 16V	CN005	1-695-342-31	PIN, CONNECTOR (PC BOARD) 19P	
C805	1-164-004-11	CERAMIC CHIP	0.1uF 25V	CN006	1-778-772-11	CONNECTOR, FFC/FPC 7P	
C806	1-164-004-11	CERAMIC CHIP	0.1uF 25V	CN101	1-774-768-11	CONNECTOR, FFC/FPC 17P	
C807	1-107-823-11	CERAMIC CHIP	0.47uF 16V	CN102	1-506-473-11	PIN, CONNECTOR 8P	
C808	1-163-809-11	CERAMIC CHIP	0.047uF 25V	CN501	1-695-352-11	PIN, CONNECTOR (PC BOARD) 29P	
C809	1-163-017-00	CERAMIC CHIP	0.0047uF 5%	< DIODE >			
C810	1-164-004-11	CERAMIC CHIP	0.1uF 25V	D002	8-719-200-02	DIODE 10E2	
C811	1-126-960-11	ELECT	1uF 20%	D004	8-719-801-78	DIODE 1SS184	
C812	1-164-232-11	CERAMIC CHIP	0.01uF 50V	D005	8-719-801-78	DIODE 1SS184	
C813	1-164-232-11	CERAMIC CHIP	0.01uF 50V	D201	8-719-404-49	DIODE MA111	
C814	1-164-004-11	CERAMIC CHIP	0.1uF 10%	D202	8-719-404-49	DIODE MA111	
C815	1-164-004-11	CERAMIC CHIP	0.1uF 10%	D301	8-719-404-49	DIODE MA111	
C816	1-164-004-11	CERAMIC CHIP	0.1uF 10%	D302	8-719-801-78	DIODE 1SS184	
C818	1-164-004-11	CERAMIC CHIP	0.1uF 10%	D502	8-719-801-78	DIODE 1SS184	
C819	1-164-004-11	CERAMIC CHIP	0.1uF 10%	D801	8-719-210-33	DIODE EC10DS2	
C820	1-164-004-11	CERAMIC CHIP	0.1uF 10%	D802	8-719-106-44	DIODE RD9.1M-B2	
C821	1-163-017-00	CERAMIC CHIP	0.0047uF 5%	< FILTER >			
C822	1-163-017-00	CERAMIC CHIP	0.0047uF 5%	FL501	1-415-764-21	DELAY LINE LC	
C823	1-163-017-00	CERAMIC CHIP	0.0047uF 5%	FL502	1-236-774-11	FILTER, LOW PASS (Y)	
C824	1-124-589-11	ELECT	47uF 20%	FL503	1-236-848-21	FILTER, LOW PASS	
C825	1-163-017-00	CERAMIC CHIP	0.0047uF 5%	FL504	1-239-010-11	FILTER, LOW PASS (CCD.PAL.Y)	
C826	1-164-232-11	CERAMIC CHIP	0.01uF 50V	< IC >			
C827	1-164-232-11	CERAMIC CHIP	0.01uF 50V	IC002	8-752-883-56	IC CXP87140-071Q	
C830	1-163-037-11	CERAMIC CHIP	0.022uF 10%	IC008	8-759-070-96	IC CXA1481AQ-E2	
C834	1-126-967-11	ELECT	47uF 20%	IC009	8-759-510-73	IC BA10393F-E2	
C835	1-126-967-11	ELECT	47uF 20%	IC010	8-759-510-71	IC BA10358F-E2	
C836	1-126-967-11	ELECT	47uF 20%	IC202	8-759-510-73	IC BA10393F-E2	
C837	1-164-346-11	CERAMIC CHIP	1uF 16V				
C838	1-163-017-00	CERAMIC CHIP	0.0047uF 5%				
C839	1-163-019-00	CERAMIC CHIP	0.0068uF 10%				
C840	1-163-037-11	CERAMIC CHIP	0.022uF 10%				
C841	1-163-017-00	CERAMIC CHIP	0.0047uF 5%				
C842	1-163-019-00	CERAMIC CHIP	0.0068uF 10%				

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
IC203	8-759-290-72	IC AN3988NFBP	L535	1-410-462-11	INDUCTOR	2.2uH
IC302	8-759-009-06	IC MC14052BF	L536	1-410-476-11	INDUCTOR	33uH
IC501	8-759-513-71	IC PQ05RF21	L537	1-410-470-11	INDUCTOR	10uH
IC502	8-752-058-03	IC CXA1509AQ-T6	L539	1-410-478-11	INDUCTOR	47uH
IC503	8-759-925-74	IC SN74HC04ANS	L540	1-410-476-11	INDUCTOR	33uH
IC505	8-752-071-10	IC CXA1810AQ	L542	1-410-476-11	INDUCTOR	33uH
IC506	8-752-333-24	IC CXL1506M	L543	1-412-955-11	INDUCTOR	22uH
IC507	8-752-333-24	IC CXL1506M	L544	1-410-476-11	INDUCTOR	33uH
IC508	8-759-084-76	IC MM1111XFF	L545	1-412-951-11	INDUCTOR	10uH
IC509	8-759-009-19	IC MC14081BF	L801	1-424-522-21	COIL, CHOKE	10uH
IC510	8-759-084-76	IC MM1111XFF	L802	1-410-478-11	INDUCTOR	47uH
IC511	8-759-182-84	IC PQ05SZ5U			< IC LINK >	
IC801	8-759-327-67	IC LB1950V-TLM				
IC802	8-759-295-18	IC LB1807N-S	△PS804	1-532-685-00	LINK, IC	
IC803	8-759-700-07	IC NJM2903M			< TRANSISTOR >	
IC804	8-759-058-50	IC BA10324AF-E2				
IC805	8-759-701-39	IC NJM3404AM				
IC806	8-759-170-92	IC PQ09SZ1T				
IC807	8-759-913-06	IC BA6209				
		< COIL >				
L001	1-410-482-31	INDUCTOR	Q002	8-729-421-19	TRANSISTOR	UN2213
L004	1-410-462-11	INDUCTOR	Q005	8-729-010-25	TRANSISTOR	MSD601-RT1
L006	1-412-446-31	INDUCTOR	Q006	8-729-010-25	TRANSISTOR	MSD601-RT1
L007	1-408-621-31	INDUCTOR	Q007	8-729-421-19	TRANSISTOR	UN2213
L008	1-410-087-31	INDUCTOR	Q008	8-729-421-19	TRANSISTOR	UN2213
L009	1-410-482-31	INDUCTOR	Q010	8-729-010-05	TRANSISTOR	MSB709-RT1
L010	1-408-425-00	INDUCTOR	Q011	8-729-010-25	TRANSISTOR	MSD601-RT1
L101	1-412-951-11	INDUCTOR	Q012	8-729-421-19	TRANSISTOR	UN2213
L102	1-414-402-11	INDUCTOR	Q013	8-729-010-25	TRANSISTOR	MSD601-RT1
L301	1-410-462-11	INDUCTOR	Q014	8-729-010-25	TRANSISTOR	MSD601-RT1
L501	1-410-470-11	INDUCTOR	Q015	8-729-424-08	TRANSISTOR	UN2111
L502	1-410-468-11	INDUCTOR	Q016	8-729-010-25	TRANSISTOR	MSD601-RT1
L503	1-410-476-11	INDUCTOR	Q017	8-729-421-19	TRANSISTOR	UN2213
L504	1-408-413-00	INDUCTOR	Q018	8-729-424-08	TRANSISTOR	UN2111
L505	1-408-424-00	INDUCTOR	Q101	8-729-230-49	TRANSISTOR	2SC2712-YG
L506	1-408-413-00	INDUCTOR	Q102	8-729-424-18	TRANSISTOR	UN2113
L507	1-408-413-00	INDUCTOR	Q103	8-729-424-18	TRANSISTOR	UN2113
L508	1-408-411-00	INDUCTOR	Q104	8-729-424-18	TRANSISTOR	UN2113
L509	1-408-411-00	INDUCTOR	Q106	8-729-010-29	TRANSISTOR	MSD601-RST1
L510	1-408-429-00	INDUCTOR	Q107	8-729-402-19	TRANSISTOR	XN6501
L511	1-408-413-00	INDUCTOR	Q201	8-729-424-18	TRANSISTOR	UN2113
L512	1-408-413-00	INDUCTOR	Q202	8-729-028-70	TRANSISTOR	UN2225T-(TX)
L513	1-410-466-41	INDUCTOR	Q203	8-729-028-70	TRANSISTOR	UN2225T-(TX)
L514	1-408-422-00	INDUCTOR	Q207	8-729-421-19	TRANSISTOR	UN2213
L515	1-410-482-31	INDUCTOR	Q208	8-729-010-05	TRANSISTOR	MSB709-RT1
L516	1-410-466-41	INDUCTOR	Q209	8-729-010-05	TRANSISTOR	MSB709-RT1
L517	1-408-429-00	INDUCTOR	Q210	8-729-424-18	TRANSISTOR	UN2113
L518	1-408-411-00	INDUCTOR	Q211	8-729-424-08	TRANSISTOR	UN2111
L522	1-408-413-00	INDUCTOR	Q220	8-729-010-25	TRANSISTOR	MSD601-RT1
L523	1-410-476-11	INDUCTOR	Q221	8-729-421-19	TRANSISTOR	UN2213
L524	1-408-413-00	INDUCTOR	Q222	8-729-421-19	TRANSISTOR	UN2213
L526	1-410-482-31	INDUCTOR	Q223	8-729-421-19	TRANSISTOR	UN2213
L527	1-410-476-11	INDUCTOR	Q224	8-729-424-45	TRANSISTOR	UN211D-TX
L528	1-410-478-11	INDUCTOR	Q225	8-729-900-51	TRANSISTOR	DTA114TK
L529	1-410-476-11	INDUCTOR	Q226	8-729-424-18	TRANSISTOR	UN2113
L530	1-408-422-00	INDUCTOR	Q227	8-729-421-19	TRANSISTOR	UN2213
L531	1-408-406-00	INDUCTOR	Q228	8-729-421-19	TRANSISTOR	UN2213
L532	1-410-470-11	INDUCTOR	Q301	8-729-010-05	TRANSISTOR	MSB709-RT1
L533	1-410-476-11	INDUCTOR	Q302	8-729-010-05	TRANSISTOR	MSB709-RT1
L534	1-410-468-11	INDUCTOR	Q303	8-729-402-19	TRANSISTOR	XN6501

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
Q305	8-729-402-19	TRANSISTOR XN6501		Q562	8-729-424-18	TRANSISTOR UN2113	
Q327	8-729-010-25	TRANSISTOR MSD601-RT1		Q563	8-729-010-25	TRANSISTOR MSD601-RT1	
Q328	8-729-010-05	TRANSISTOR MSB709-RT1		Q564	8-729-010-05	TRANSISTOR MSB709-RT1	
Q410	8-729-421-19	TRANSISTOR UN2213		Q565	8-729-230-49	TRANSISTOR 2SC2712-YG	
Q411	8-729-424-76	TRANSISTOR UN2210-TX		Q567	8-729-010-25	TRANSISTOR MSD601-RT1	
Q501	8-729-010-25	TRANSISTOR MSD601-RT1		Q569	8-729-010-25	TRANSISTOR MSD601-RT1	
Q502	8-729-230-49	TRANSISTOR 2SC2712-YG		Q570	8-729-424-18	TRANSISTOR UN2113	
Q503	8-729-424-32	TRANSISTOR UN2117		Q571	8-729-421-19	TRANSISTOR UN2213	
Q504	8-729-230-49	TRANSISTOR 2SC2712-YG		Q572	8-729-010-25	TRANSISTOR MSD601-RT1	
Q505	8-729-421-19	TRANSISTOR UN2213		Q573	8-729-010-05	TRANSISTOR MSB709-RT1	
Q506	8-729-421-90	TRANSISTOR XN4113		Q574	8-729-010-05	TRANSISTOR MSB709-RT1	
Q507	8-729-010-05	TRANSISTOR MSB709-RT1		Q575	8-729-010-05	TRANSISTOR MSB709-RT1	
Q508	8-729-010-25	TRANSISTOR MSD601-RT1		Q576	8-729-010-05	TRANSISTOR MSB709-RT1	
Q509	8-729-424-70	TRANSISTOR UN2217		Q577	8-729-010-25	TRANSISTOR MSD601-RT1	
Q511	8-729-420-12	TRANSISTOR XN4213		Q578	8-729-010-25	TRANSISTOR MSD601-RT1	
Q512	8-729-230-49	TRANSISTOR 2SC2712-YG		Q579	8-729-010-25	TRANSISTOR MSD601-RT1	
Q513	8-729-010-25	TRANSISTOR MSD601-RT1		Q801	8-729-231-60	TRANSISTOR 2SD1406-YGR	
Q514	8-729-010-25	TRANSISTOR MSD601-RT1		< RESISTOR >			
Q516	8-729-420-12	TRANSISTOR XN4213		R002	1-216-061-00	METAL CHIP 3.3K	5% 1/10W
Q517	8-729-230-49	TRANSISTOR 2SC2712-YG		R003	1-216-085-00	METAL CHIP 33K	5% 1/10W
Q518	8-729-010-05	TRANSISTOR MSB709-RT1		R004	1-216-093-00	METAL CHIP 68K	5% 1/10W
Q519	8-729-010-25	TRANSISTOR MSD601-RT1		R005	1-216-295-00	METAL CHIP 0	5% 1/10W
Q520	8-729-010-25	TRANSISTOR MSD601-RT1		R006	1-216-085-00	METAL CHIP 33K	5% 1/10W
Q521	8-729-421-19	TRANSISTOR UN2213		R007	1-216-093-00	METAL CHIP 68K	5% 1/10W
Q522	8-729-421-19	TRANSISTOR UN2213		R008	1-216-073-00	METAL CHIP 10K	5% 1/10W
Q523	8-729-421-19	TRANSISTOR UN2213		R009	1-216-041-00	METAL CHIP 470	5% 1/10W
Q524	8-729-420-10	TRANSISTOR XN4115		R010	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q525	8-729-420-12	TRANSISTOR XN4213		R011	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q526	8-729-420-10	TRANSISTOR XN4115		R012	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q527	8-729-422-54	TRANSISTOR XN4215		R013	1-216-295-00	METAL CHIP 0	5% 1/10W
Q528	8-729-420-12	TRANSISTOR XN4213		R014	1-216-295-00	METAL CHIP 0	5% 1/10W
Q530	8-729-010-25	TRANSISTOR MSD601-RT1		R015	1-216-295-00	METAL CHIP 0	5% 1/10W
Q532	8-729-421-19	TRANSISTOR UN2213		R016	1-216-295-00	METAL CHIP 0	5% 1/10W
Q533	8-729-010-25	TRANSISTOR MSD601-RT1		R017	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q534	8-729-422-54	TRANSISTOR XN4215		R018	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q535	8-729-010-25	TRANSISTOR MSD601-RT1		R019	1-216-065-00	METAL CHIP 4.7K	5% 1/10W
Q536	8-729-010-05	TRANSISTOR MSB709-RT1		R020	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q537	8-729-424-18	TRANSISTOR UN2113		R021	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q538	8-729-420-12	TRANSISTOR XN4213		R022	1-216-089-91	METAL GLAZE 47K	5% 1/10W
Q539	8-729-010-05	TRANSISTOR MSB709-RT1		R023	1-216-073-00	METAL CHIP 10K	5% 1/10W
Q540	8-729-420-12	TRANSISTOR XN4213		R024	1-216-295-00	METAL CHIP 0	5% 1/10W
Q541	8-729-010-25	TRANSISTOR MSD601-RT1		R025	1-216-089-91	METAL GLAZE 47K	5% 1/10W
Q542	8-729-421-19	TRANSISTOR UN2213		R026	1-216-041-00	METAL CHIP 470	5% 1/10W
Q543	8-729-010-05	TRANSISTOR MSB709-RT1		R027	1-216-295-00	METAL CHIP 0	5% 1/10W
Q544	8-729-010-25	TRANSISTOR MSD601-RT1		R029	1-216-073-00	METAL CHIP 10K	5% 1/10W
Q545	8-729-420-12	TRANSISTOR XN4213		R030	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q546	8-729-424-32	TRANSISTOR UN2117		R031	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q547	8-729-010-05	TRANSISTOR MSB709-RT1		R032	1-216-295-00	METAL CHIP 0	5% 1/10W
Q548	8-729-010-25	TRANSISTOR MSD601-RT1		R033	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q549	8-729-424-70	TRANSISTOR UN2217		R034	1-216-295-00	METAL CHIP 0	5% 1/10W
Q550	8-729-010-25	TRANSISTOR MSD601-RT1		R035	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q552	8-729-420-12	TRANSISTOR XN4213		R036	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q554	8-729-230-49	TRANSISTOR 2SC2712-YG		R037	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q555	8-729-424-70	TRANSISTOR UN2217		R038	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q556	8-729-010-25	TRANSISTOR MSD601-RT1		R039	1-216-295-00	METAL CHIP 0	5% 1/10W
Q557	8-729-010-25	TRANSISTOR MSD601-RT1		R040	1-216-061-00	METAL CHIP 3.3K	5% 1/10W
Q558	8-729-010-25	TRANSISTOR MSD601-RT1		R041	1-216-073-00	METAL CHIP 10K	5% 1/10W
Q559	8-729-230-49	TRANSISTOR 2SC2712-YG		R042	1-216-049-00	METAL CHIP 1K	5% 1/10W
Q560	8-729-010-05	TRANSISTOR MSB709-RT1					
Q561	8-729-010-05	TRANSISTOR MSB709-RT1					

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R044	1-216-089-91	METAL GLAZE	47K	R217	1-216-067-00	METAL CHIP	5.6K
R045	1-216-295-00	METAL CHIP	0	R218	1-216-689-11	METAL CHIP	39K
R047	1-216-089-91	METAL GLAZE	47K	R219	1-216-097-00	METAL CHIP	100K
R048	1-216-295-00	METAL CHIP	0	R220	1-216-049-00	METAL CHIP	1K
R049	1-216-049-00	METAL CHIP	1K	R221	1-208-808-11	METAL GLAZE	12K
R050	1-216-089-91	METAL GLAZE	47K	R223	1-216-049-00	METAL CHIP	1K
R051	1-216-295-00	METAL CHIP	0	R225	1-216-073-00	METAL CHIP	10K
R053	1-216-089-91	METAL GLAZE	47K	R226	1-216-089-91	METAL GLAZE	47K
R056	1-216-089-91	METAL GLAZE	47K	R227	1-216-067-00	METAL CHIP	5.6K
R059	1-216-089-91	METAL GLAZE	47K	R228	1-216-105-91	METAL GLAZE	220K
R061	1-216-295-00	METAL CHIP	0	R229	1-216-075-00	METAL CHIP	12K
R062	1-216-089-91	METAL GLAZE	47K	R230	1-216-055-00	METAL CHIP	1.8K
R066	1-216-089-91	METAL GLAZE	47K	R231	1-216-025-00	METAL CHIP	100
R069	1-216-089-91	METAL GLAZE	47K	R232	1-216-049-00	METAL CHIP	1K
R070	1-216-049-00	METAL CHIP	1K	R233	1-216-043-91	METAL GLAZE	560
R072	1-216-089-91	METAL GLAZE	47K	R234	1-216-046-00	METAL CHIP	750
R074	1-216-295-00	METAL CHIP	0	R235	1-216-059-00	METAL CHIP	2.7K
R075	1-216-089-91	METAL GLAZE	47K	R236	1-216-073-00	METAL CHIP	10K
R076	1-216-295-00	METAL CHIP	0	R237	1-216-061-00	METAL CHIP	3.3K
R078	1-216-089-91	METAL GLAZE	47K	R238	1-216-061-00	METAL CHIP	3.3K
R082	1-216-049-00	METAL CHIP	1K	R239	1-216-089-91	METAL GLAZE	47K
R083	1-216-049-00	METAL CHIP	1K	R262	1-216-073-00	METAL CHIP	10K
R084	1-216-049-00	METAL CHIP	1K	R263	1-216-097-00	METAL CHIP	100K
R090	1-216-049-00	METAL CHIP	1K	R264	1-216-073-00	METAL CHIP	10K
R101	1-208-770-11	METAL GLAZE	330	R265	1-216-073-00	METAL CHIP	10K
R102	1-208-760-11	METAL GLAZE	120	R266	1-216-073-00	METAL CHIP	10K
R103	1-208-780-11	METAL GLAZE	820	R267	1-216-057-00	METAL CHIP	2.2K
R104	1-216-047-91	METAL GLAZE	820	R268	1-216-073-00	METAL CHIP	10K
R105	1-216-051-00	METAL CHIP	1.2K	R269	1-216-689-11	METAL CHIP	39K
R106	1-208-796-11	METAL GLAZE	3.9K	R301	1-216-057-00	METAL CHIP	2.2K
R107	1-216-049-00	METAL CHIP	1K	R302	1-216-057-00	METAL CHIP	2.2K
R108	1-216-079-00	METAL CHIP	18K	R303	1-216-025-00	METAL CHIP	100
R109	1-208-780-11	METAL GLAZE	820	R304	1-216-085-00	METAL CHIP	33K
R110	1-216-041-00	METAL CHIP	470	R305	1-216-081-00	METAL CHIP	22K
R111	1-208-772-11	METAL GLAZE	390	R312	1-216-025-00	METAL CHIP	100
R112	1-216-073-00	METAL CHIP	10K	R313	1-216-081-00	METAL CHIP	22K
R113	1-208-752-11	METAL GLAZE	56	R314	1-216-049-00	METAL CHIP	1K
R114	1-216-295-00	METAL CHIP	0	R320	1-216-057-00	METAL CHIP	2.2K
R115	1-216-077-00	METAL CHIP	15K	R377	1-216-081-00	METAL CHIP	22K
R116	1-216-045-00	METAL CHIP	680	R384	1-216-081-00	METAL CHIP	22K
R117	1-216-037-00	METAL CHIP	330	R387	1-216-053-00	METAL CHIP	1.5K
R126	1-216-057-00	METAL CHIP	2.2K	R388	1-216-063-91	METAL GLAZE	3.9K
R127	1-216-077-00	METAL CHIP	15K	R389	1-216-059-00	METAL CHIP	2.7K
R128	1-216-057-00	METAL CHIP	2.2K	R393	1-216-065-00	METAL CHIP	4.7K
R129	1-216-079-00	METAL CHIP	18K	R394	1-216-121-91	METAL GLAZE	1M
R130	1-216-049-00	METAL CHIP	1K	R395	1-216-053-00	METAL CHIP	1.5K
R201	1-216-049-00	METAL CHIP	1K	R401	1-216-295-00	METAL CHIP	0
R202	1-216-049-00	METAL CHIP	1K	R404	1-216-085-00	METAL CHIP	33K
R203	1-216-089-91	METAL GLAZE	47K	R409	1-216-295-00	METAL CHIP	0
R204	1-216-089-91	METAL GLAZE	47K	R501	1-216-041-00	METAL CHIP	470
R205	1-216-097-00	METAL CHIP	100K	R502	1-216-049-00	METAL CHIP	1K
R206	1-216-061-00	METAL CHIP	3.3K	R503	1-216-049-00	METAL CHIP	1K
R207	1-216-121-91	METAL GLAZE	1M	R504	1-216-089-91	METAL GLAZE	47K
R208	1-216-065-00	METAL CHIP	4.7K	R505	1-216-073-00	METAL CHIP	10K
R209	1-216-097-00	METAL CHIP	100K	R506	1-216-077-00	METAL CHIP	15K
R210	1-216-061-00	METAL CHIP	3.3K	R507	1-216-061-00	METAL CHIP	3.3K
R212	1-216-033-00	METAL CHIP	220	R508	1-216-043-91	METAL GLAZE	560
R213	1-216-105-91	METAL GLAZE	220K	R509	1-216-049-00	METAL CHIP	1K
R214	1-216-075-00	METAL CHIP	12K	R510	1-216-047-91	METAL GLAZE	820
R215	1-216-295-00	METAL CHIP	0	R511	1-216-059-00	METAL CHIP	2.7K

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R512	1-216-039-00	METAL CHIP	390	R578	1-216-081-00	METAL CHIP	22K
R513	1-216-027-00	METAL CHIP	120	R579	1-216-049-00	METAL CHIP	1K
R514	1-216-047-91	METAL GLAZE	820	R580	1-216-049-00	METAL CHIP	1K
R515	1-216-085-00	METAL CHIP	33K	R581	1-216-295-00	METAL CHIP	0
R516	1-216-075-00	METAL CHIP	12K	R582	1-216-057-00	METAL CHIP	2.2K
R517	1-216-041-00	METAL CHIP	470	R584	1-216-073-00	METAL CHIP	10K
R518	1-216-041-00	METAL CHIP	470	R585	1-216-055-00	METAL CHIP	1.8K
R519	1-216-063-91	METAL GLAZE	3.9K	R586	1-216-057-00	METAL CHIP	2.2K
R520	1-216-043-91	METAL GLAZE	560	R587	1-216-073-00	METAL CHIP	10K
R521	1-216-037-00	METAL CHIP	330	R588	1-216-063-91	METAL GLAZE	3.9K
R522	1-216-025-00	METAL CHIP	100	R589	1-216-057-00	METAL CHIP	2.2K
R523	1-216-033-00	METAL CHIP	220	R590	1-216-073-00	METAL CHIP	10K
R524	1-216-041-00	METAL CHIP	470	R591	1-216-081-00	METAL CHIP	22K
R525	1-216-045-00	METAL CHIP	680	R592	1-216-067-00	METAL CHIP	5.6K
R526	1-216-043-91	METAL GLAZE	560	R593	1-216-057-00	METAL CHIP	2.2K
R527	1-216-073-00	METAL CHIP	10K	R594	1-216-057-00	METAL CHIP	2.2K
R529	1-216-073-00	METAL CHIP	10K	R595	1-216-105-91	METAL GLAZE	220K
R530	1-216-043-91	METAL GLAZE	560	R596	1-208-812-11	METAL GLAZE	18K
R531	1-216-049-00	METAL CHIP	1K	R597	1-216-092-00	METAL GLAZE	62K
R532	1-216-049-00	METAL CHIP	1K	R598	1-208-816-11	METAL GLAZE	27K
R533	1-216-049-00	METAL CHIP	1K	R599	1-208-812-11	METAL GLAZE	18K
R535	1-208-772-11	METAL GLAZE	390	R600	1-216-073-00	METAL CHIP	10K
R536	1-216-045-00	METAL CHIP	680	R601	1-216-057-00	METAL CHIP	2.2K
R537	1-216-065-00	METAL CHIP	4.7K	R602	1-216-033-00	METAL CHIP	220
R538	1-216-045-00	METAL CHIP	680	R603	1-216-061-00	METAL CHIP	3.3K
R539	1-216-059-00	METAL CHIP	2.7K	R604	1-216-295-00	METAL CHIP	0
R540	1-216-077-00	METAL CHIP	15K	R606	1-216-089-91	METAL GLAZE	47K
R541	1-216-085-00	METAL CHIP	33K	R608	1-216-049-00	METAL CHIP	1K
R542	1-216-041-00	METAL CHIP	470	R610	1-216-073-00	METAL CHIP	10K
R543	1-216-033-00	METAL CHIP	220	R611	1-216-079-00	METAL CHIP	18K
R544	1-216-065-00	METAL CHIP	4.7K	R612	1-216-081-00	METAL CHIP	22K
R545	1-216-045-00	METAL CHIP	680	R613	1-216-075-00	METAL CHIP	12K
R546	1-216-037-00	METAL CHIP	330	R614	1-216-065-00	METAL CHIP	4.7K
R547	1-216-041-00	METAL CHIP	470	R615	1-208-794-11	METAL GLAZE	3.3K
R548	1-216-043-91	METAL GLAZE	560	R616	1-208-784-11	METAL GLAZE	1.2K
R549	1-216-060-00	METAL GLAZE	3K	R618	1-216-049-00	METAL CHIP	1K
R550	1-216-041-00	METAL CHIP	470	R619	1-216-083-00	METAL CHIP	27K
R551	1-216-077-00	METAL CHIP	15K	R620	1-216-075-00	METAL CHIP	12K
R552	1-216-073-00	METAL CHIP	10K	R621	1-208-772-11	METAL GLAZE	390
R553	1-216-057-00	METAL CHIP	2.2K	R622	1-216-063-91	METAL GLAZE	3.9K
R554	1-216-295-00	METAL CHIP	0	R623	1-216-057-00	METAL CHIP	2.2K
R555	1-216-041-00	METAL CHIP	470	R624	1-216-044-00	METAL CHIP	620
R556	1-216-061-00	METAL CHIP	3.3K	R625	1-216-035-00	METAL CHIP	270
R557	1-216-083-00	METAL CHIP	27K	R626	1-216-049-00	METAL CHIP	1K
R558	1-216-077-00	METAL CHIP	15K	R627	1-208-774-11	METAL GLAZE	470
R559	1-216-045-00	METAL CHIP	680	R628	1-216-295-00	METAL CHIP	0
R560	1-216-041-00	METAL CHIP	470	R629	1-216-049-00	METAL CHIP	1K
R561	1-216-049-00	METAL CHIP	1K	R630	1-216-041-00	METAL CHIP	470
R562	1-216-057-00	METAL CHIP	2.2K	R631	1-216-043-91	METAL GLAZE	560
R563	1-216-049-00	METAL CHIP	1K	R632	1-216-041-00	METAL CHIP	470
R564	1-216-049-00	METAL CHIP	1K	R633	1-216-041-00	METAL CHIP	470
R565	1-216-049-00	METAL CHIP	1K	R635	1-216-295-00	METAL CHIP	0
R568	1-216-049-00	METAL CHIP	1K	R636	1-216-035-00	METAL CHIP	270
R569	1-216-049-00	METAL CHIP	1K	R637	1-216-061-00	METAL CHIP	3.3K
R571	1-216-049-00	METAL CHIP	1K	R638	1-216-059-00	METAL CHIP	2.7K
R572	1-216-049-00	METAL CHIP	1K	R639	1-216-035-00	METAL CHIP	270
R573	1-216-057-00	METAL CHIP	2.2K	R640	1-216-053-00	METAL CHIP	1.5K
R574	1-216-295-00	METAL CHIP	0	R641	1-216-041-00	METAL CHIP	470
R576	1-216-049-00	METAL CHIP	1K	R642	1-216-295-00	METAL CHIP	0
R577	1-216-073-00	METAL CHIP	10K	R643	1-216-039-00	METAL CHIP	390

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R644	1-216-121-91	METAL GLAZE	1M	R711	1-216-059-00	METAL CHIP	2.7K
R645	1-216-031-00	METAL CHIP	180	R712	1-216-057-00	METAL CHIP	2.2K
R646	1-216-085-00	METAL CHIP	33K	R713	1-216-057-00	METAL CHIP	2.2K
R647	1-216-091-00	METAL CHIP	56K	R714	1-216-089-91	METAL GLAZE	47K
R648	1-216-041-00	METAL CHIP	470	R715	1-216-073-00	METAL CHIP	10K
R649	1-216-049-00	METAL CHIP	1K	R716	1-216-073-00	METAL CHIP	10K
R650	1-216-295-00	METAL CHIP	0	R717	1-216-057-00	METAL CHIP	2.2K
R651	1-216-027-00	METAL CHIP	120	R720	1-216-049-00	METAL CHIP	1K
R652	1-216-095-00	METAL CHIP	82K	R721	1-216-049-00	METAL CHIP	1K
R653	1-216-049-00	METAL CHIP	1K	R722	1-216-073-00	METAL CHIP	10K
R654	1-216-041-00	METAL CHIP	470	R723	1-216-073-00	METAL CHIP	10K
R655	1-216-041-00	METAL CHIP	470	R724	1-216-035-00	METAL CHIP	270
R656	1-216-049-00	METAL CHIP	1K	R725	1-216-295-00	METAL CHIP	0
R657	1-216-029-00	METAL CHIP	150	R726	1-216-295-00	METAL CHIP	0
R659	1-216-041-00	METAL CHIP	470	R731	1-216-041-00	METAL CHIP	470
R660	1-216-049-00	METAL CHIP	1K	R732	1-216-041-00	METAL CHIP	470
R661	1-216-035-00	METAL CHIP	270	R733	1-216-049-00	METAL CHIP	1K
R662	1-216-039-00	METAL CHIP	390	R734	1-216-049-00	METAL CHIP	1K
R663	1-216-039-00	METAL CHIP	390	R735	1-216-073-00	METAL CHIP	10K
R664	1-216-041-00	METAL CHIP	470	R736	1-216-069-00	METAL CHIP	6.8K
R665	1-216-057-00	METAL CHIP	2.2K	R737	1-216-073-00	METAL CHIP	10K
R666	1-216-057-00	METAL CHIP	2.2K	R738	1-216-049-00	METAL CHIP	1K
R667	1-216-069-00	METAL CHIP	6.8K	R742	1-216-017-91	METAL GLAZE	47
R669	1-216-041-00	METAL CHIP	470	R743	1-216-295-00	METAL CHIP	0
R670	1-216-041-00	METAL CHIP	470	R744	1-216-041-00	METAL CHIP	470
R671	1-216-295-00	METAL CHIP	0	R745	1-216-073-00	METAL CHIP	10K
R672	1-216-061-00	METAL CHIP	3.3K	R747	1-216-295-00	METAL CHIP	0
R674	1-216-081-00	METAL CHIP	22K	R748	1-216-045-00	METAL CHIP	680
R675	1-216-089-91	METAL GLAZE	47K	R801	1-216-089-91	METAL GLAZE	47K
R677	1-216-035-00	METAL CHIP	270	R802	1-216-073-00	METAL CHIP	10K
R678	1-216-033-00	METAL CHIP	220	R803	1-216-073-00	METAL CHIP	10K
R679	1-216-295-00	METAL CHIP	0	R805	1-217-671-11	METAL CHIP	1
R680	1-216-057-00	METAL CHIP	2.2K	R806	1-216-295-00	METAL CHIP	0
R681	1-216-121-91	METAL GLAZE	1M	R807	1-217-671-11	METAL CHIP	1
R682	1-216-019-00	METAL CHIP	56	R808	1-217-671-11	METAL CHIP	1
R683	1-216-041-00	METAL CHIP	470	R809	1-216-019-00	METAL CHIP	56
R684	1-216-045-00	METAL CHIP	680	R810	1-216-121-91	METAL GLAZE	1M
R686	1-216-081-00	METAL CHIP	22K	R811	1-216-041-00	METAL CHIP	470
R687	1-216-073-00	METAL CHIP	10K	R813	1-216-081-00	METAL CHIP	22K
R688	1-216-295-00	METAL CHIP	0	R815	1-216-073-00	METAL CHIP	10K
R689	1-216-043-91	METAL GLAZE	560	R816	1-216-101-00	METAL CHIP	150K
R690	1-216-057-00	METAL CHIP	2.2K	R817	1-216-101-00	METAL CHIP	150K
R691	1-216-073-00	METAL CHIP	10K	R818	1-216-108-00	METAL GLAZE	300K
R693	1-216-027-00	METAL CHIP	120	R820	1-219-107-91	METAL GLAZE	1.5
R694	1-216-095-00	METAL CHIP	82K	R821	1-219-107-91	METAL GLAZE	1.5
R695	1-216-073-00	METAL CHIP	10K	R822	1-219-107-91	METAL GLAZE	1.5
R696	1-216-085-00	METAL CHIP	33K	R823	1-216-097-00	METAL CHIP	100K
R697	1-216-091-00	METAL CHIP	56K	R824	1-216-089-91	METAL GLAZE	47K
R698	1-216-047-91	METAL GLAZE	820	R825	1-216-089-91	METAL GLAZE	47K
R699	1-216-053-00	METAL CHIP	1.5K	R826	1-216-089-91	METAL GLAZE	47K
R700	1-216-057-00	METAL CHIP	2.2K	R827	1-216-295-00	METAL CHIP	0
R701	1-216-041-00	METAL CHIP	470	R829	1-216-295-00	METAL CHIP	0
R702	1-216-049-00	METAL CHIP	1K	R830	1-216-019-00	METAL CHIP	56
R704	1-216-059-00	METAL CHIP	2.7K	R831	1-216-295-00	METAL CHIP	0
R705	1-216-045-00	METAL CHIP	680	R832	1-216-295-00	METAL CHIP	0
R706	1-216-044-00	METAL CHIP	620	R840	1-216-049-00	METAL CHIP	1K
R707	1-216-057-00	METAL CHIP	2.2K	R841	1-216-121-91	METAL GLAZE	1M
R708	1-216-033-00	METAL CHIP	220	R842	1-216-295-00	METAL CHIP	0
R709	1-216-039-00	METAL CHIP	390	R844	1-216-295-00	METAL CHIP	0
R710	1-216-061-00	METAL CHIP	3.3K	R845	1-216-073-00	METAL CHIP	10K

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R846	1-216-073-00	METAL CHIP	10K	R970	1-216-074-00	METAL CHIP	11K
R847	1-216-073-00	METAL CHIP	10K	R971	1-216-097-00	METAL CHIP	100K
R848	1-216-093-00	METAL CHIP	68K	R972	1-216-069-00	METAL CHIP	6.8K
R849	1-216-093-00	METAL CHIP	68K	R973	1-216-121-91	METAL GLAZE	1M
R850	1-216-093-00	METAL CHIP	68K	R976	1-216-037-00	METAL CHIP	330
R851	1-216-079-00	METAL CHIP	18K	R977	1-208-800-11	METAL GLAZE	5.6K
R852	1-216-073-00	METAL CHIP	10K	R978	1-208-810-11	METAL GLAZE	15K
R853	1-217-671-11	METAL CHIP	1	R979	1-216-099-00	METAL CHIP	120K
R854	1-216-295-00	METAL CHIP	0	R980	1-216-037-00	METAL CHIP	330
R858	1-216-025-00	METAL CHIP	100	R981	1-216-105-91	METAL GLAZE	220K
R859	1-216-025-00	METAL CHIP	100	R982	1-216-099-00	METAL CHIP	120K
R901	1-216-073-00	METAL CHIP	10K	R983	1-216-089-91	METAL GLAZE	47K
R902	1-216-172-00	METAL CHIP	82	R984	1-216-093-00	METAL CHIP	68K
R903	1-216-099-00	METAL CHIP	120K	R985	1-216-109-00	METAL CHIP	330K
R904	1-216-099-00	METAL CHIP	120K	R986	1-216-041-00	METAL CHIP	470
R905	1-216-295-00	METAL CHIP	0	R988	1-216-041-00	METAL CHIP	470
R906	1-216-295-00	METAL CHIP	0	R989	1-216-069-00	METAL CHIP	6.8K
R907	1-216-295-00	METAL CHIP	0	R990	1-216-077-00	METAL CHIP	15K
R908	1-216-049-00	METAL CHIP	1K	R991	1-216-085-00	METAL CHIP	33K
R909	1-216-049-00	METAL CHIP	1K	R992	1-216-689-11	METAL CHIP	39K
R910	1-216-089-91	METAL GLAZE	47K	R994	1-216-079-00	METAL CHIP	18K
R911	1-216-089-91	METAL GLAZE	47K	R996	1-216-073-00	METAL CHIP	10K
R912	1-216-089-91	METAL GLAZE	47K	R998	1-216-073-00	METAL CHIP	10K
R913	1-216-057-00	METAL CHIP	2.2K	R999	1-216-085-00	METAL CHIP	33K
R914	1-216-049-00	METAL CHIP	1K	< VARIABLE RESISTOR >			
R916	1-216-057-00	METAL CHIP	2.2K	RV101	1-223-238-11	RES, ADJ, CARBON 4.7K	
R917	1-216-057-00	METAL CHIP	2.2K	RV102	1-223-238-11	RES, ADJ, CARBON 4.7K	
R918	1-216-057-00	METAL CHIP	2.2K	RV201	1-223-240-21	RES, ADJ, CARBON 22K	
R919	1-216-057-00	METAL CHIP	2.2K	RV202	1-238-856-11	RES, ADJ, CERMET 10K	
R920	1-216-073-00	METAL CHIP	10K	RV203	1-223-240-21	RES, ADJ, CARBON 22K	
R921	1-216-089-91	METAL GLAZE	47K	RV501	1-223-991-21	RES, CARBON ADJ VAR 1K	
R929	1-216-009-00	METAL CHIP	22	RV502	1-223-994-21	RES, CARBON ADJ VAR 4.7K	
R932	1-216-113-00	METAL CHIP	470K	RV503	1-223-994-21	RES, CARBON ADJ VAR 4.7K	
R933	1-216-033-00	METAL CHIP	220	RV504	1-223-996-21	RES, CARBON ADJ VAR 22K	
R934	1-216-081-00	METAL CHIP	22K	RV505	1-223-994-21	RES, CARBON ADJ VAR 4.7K	
R935	1-216-073-00	METAL CHIP	10K	RV506	1-223-994-21	RES, CARBON ADJ VAR 4.7K	
R936	1-216-073-00	METAL CHIP	10K	RV507	1-223-996-21	RES, CARBON ADJ VAR 22K	
R938	1-216-045-00	METAL CHIP	680	RV508	1-223-996-21	RES, CARBON ADJ VAR 22K	
R940	1-216-057-00	METAL CHIP	2.2K	RV509	1-223-994-21	RES, CARBON ADJ VAR 4.7K	
R941	1-216-085-00	METAL CHIP	33K	RV510	1-223-996-21	RES, CARBON ADJ VAR 22K	
R942	1-216-049-00	METAL CHIP	1K	RV511	1-223-990-21	RES, CARBON ADJ VAR 470	
R944	1-216-089-91	METAL GLAZE	47K	RV512	1-223-992-21	RES, CARBON ADJ VAR 2.2K	
R947	1-216-097-00	METAL CHIP	100K	RV513	1-223-991-21	RES, CARBON ADJ VAR 1K	
R948	1-216-073-00	METAL CHIP	10K	RV514	1-223-991-21	RES, CARBON ADJ VAR 1K	
R949	1-216-295-00	METAL CHIP	0	< VIBRATOR >			
R954	1-216-075-00	METAL CHIP	12K	X001	1-767-308-21	VIBRATOR, CRYSTAL	
R955	1-216-073-00	METAL CHIP	10K	X002	1-760-239-11	VIBRATOR, CRYSTAL 16MHZ	
R956	1-216-081-00	METAL CHIP	22K	X501	1-577-117-11	VIBRATOR, CRYSTAL 4.4MHZ	
R957	1-216-121-91	METAL GLAZE	1M				
R958	1-216-049-00	METAL CHIP	1K				
R960	1-216-086-00	METAL GLAZE	36K				
R961	1-216-129-00	METAL CHIP	2.2M				
R962	1-216-296-00	METAL CHIP	0				
R963	1-216-073-00	METAL CHIP	10K				
R964	1-216-001-00	METAL CHIP	10				
R965	1-216-073-00	METAL CHIP	10K				
R966	1-216-001-00	METAL CHIP	10				
R967	1-216-069-00	METAL CHIP	6.8K				
R968	1-216-073-00	METAL CHIP	10K				
R969	1-216-121-91	METAL GLAZE	1M				

WV-34

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks	
*	A-7066-973-A	MV-34 (NP) BOARD, COMPLETE(MN,NP,NR)	(Ref.No.: 4,000 Series)	C264	1-163-009-11	CERAMIC CHIP	10%	
		*****		C266	1-163-009-11	CERAMIC CHIP	10%	
*	A-7066-974-A	MV-34 (VC) BOARD, COMPLETE(AS,VC)		C267	1-163-009-11	CERAMIC CHIP	10%	
		*****		C273	1-126-154-11	ELECT	20%	
*	A-7066-977-A	MV-34 (UX) BOARD, COMPLETE(UX)		C274	1-164-004-11	CERAMIC CHIP	10%	

*	A-7066-998-A	MV-34 (B) BOARD, COMPLETE (B)		C281	1-124-589-11	ELECT	20%	
		*****		C284	1-126-154-11	ELECT	20%	
*					C301	1-165-319-11	CERAMIC CHIP	5%
*					C302	1-163-104-00	CERAMIC CHIP	50%
*				C303	1-165-319-11	CERAMIC CHIP	50%	
	1-555-110-00	CABLE, PIN		C304	1-164-489-11	CERAMIC CHIP	10%	
	3-741-933-01	HEAT SINK		C306	1-164-161-11	CERAMIC CHIP	10%	
	3-960-273-01	SPACER, TOP END		C307	1-164-161-11	CERAMIC CHIP	10%	
	3-960-274-01	SPACER, LED		C308	1-126-157-11	ELECT	10%	
	7-685-646-79	SCREW +BVP 3X8 TYPE2 IT-3		C309	1-165-319-11	CERAMIC CHIP	20%	
		< CAPACITOR >						
				C310	1-124-589-11	ELECT	20%	
C001	1-163-038-00	CERAMIC CHIP	25V	C311	1-164-232-11	CERAMIC CHIP	50%	
C002	1-163-038-00	CERAMIC CHIP	0.1uF	C401	1-126-966-11	ELECT	20%	
C003	1-164-004-11	CERAMIC CHIP	10%	C402	1-124-229-00	ELECT	20%	
C011	1-164-232-11	CERAMIC CHIP	0.01uF	C403	1-164-232-11	CERAMIC CHIP	50%	
C054	1-137-373-11	FILM	0.033uF					
				C415	1-126-926-11	ELECT	20%	
C055	1-164-232-11	CERAMIC CHIP	50V	C416	1-163-038-00	CERAMIC CHIP	25V	
C056	1-126-157-11	ELECT	10uF	C422	1-107-839-11	ELECT CHIP	16V	
C057	1-137-441-11	FILM	0.027uF	C429	1-164-232-11	CERAMIC CHIP	50%	
C058	1-124-257-00	ELECT	2.2uF	C444	1-115-339-11	CERAMIC CHIP	50%	
C071	1-164-004-11	CERAMIC CHIP	0.1uF					
C072	1-164-004-11	CERAMIC CHIP	0.1uF	C462	1-126-966-11	ELECT	33uF	
C073	1-110-398-11	TANTAL. CHIP	15uF	C463	1-126-966-11	ELECT	33uF	
C074	1-164-004-11	CERAMIC CHIP	0.1uF	C469	1-126-963-11	ELECT	4.7uF	
C075	1-164-004-11	CERAMIC CHIP	0.1uF	C485	1-126-400-11	ELECT	22uF	
C076	1-164-004-11	CERAMIC CHIP	0.1uF	C486	1-115-339-11	CERAMIC CHIP	0.1uF	
C077	1-164-004-11	CERAMIC CHIP	0.1uF	C487	1-124-589-11	ELECT	47uF	
C078	1-126-205-11	ELECT CHIP	47uF	C488	1-115-339-11	CERAMIC CHIP	0.1uF	
C079	1-164-232-11	CERAMIC CHIP	0.01uF	C489	1-126-197-11	ELECT	10uF	
C091	1-126-603-11	ELECT CHIP	4.7uF	C490	1-115-339-11	CERAMIC CHIP	0.1uF	
C101	1-164-232-11	CERAMIC CHIP	0.01uF	C501	1-164-004-11	CERAMIC CHIP	0.1uF	
C102	1-126-154-11	ELECT	47uF	C502	1-126-933-11	ELECT	100uF	
C103	1-164-344-11	CERAMIC CHIP	0.068uF	C503	1-164-232-11	CERAMIC CHIP	0.01uF	
C104	1-126-153-11	ELECT	22uF	C504	1-126-933-11	ELECT	100uF	
C105	1-124-584-00	ELECT	100uF	C524	1-126-964-11	ELECT	10uF	
C106	1-163-009-11	CERAMIC CHIP	0.001uF	C534	1-126-961-11	ELECT	2.2uF	
C107	1-163-017-00	CERAMIC CHIP	0.0047uF	C535	1-126-961-11	ELECT	2.2uF	
C108	1-104-329-11	CERAMIC CHIP	0.1uF	C536	1-126-964-11	ELECT	10uF	
C109	1-124-257-00	ELECT	2.2uF	C540	1-126-967-11	ELECT	47uF	
C112	1-126-961-11	ELECT	2.2uF	C542	1-164-232-11	CERAMIC CHIP	0.01uF	
C201	1-164-004-11	CERAMIC CHIP	0.1uF	C547	1-126-963-11	ELECT	4.7uF	
C202	1-164-346-11	CERAMIC CHIP	1uF	C551	1-126-963-11	ELECT	4.7uF	
C203	1-126-154-11	ELECT	47uF	C552	1-164-232-11	CERAMIC CHIP	0.01uF	
C205	1-164-004-11	CERAMIC CHIP	0.1uF	C554	1-124-589-11	ELECT	47uF	
C210	1-128-057-11	ELECT	330uF	C556	1-164-232-11	CERAMIC CHIP	0.01uF	
C211	1-163-229-11	CERAMIC CHIP	12PF	C578	1-163-037-11	CERAMIC CHIP	0.022uF	
C212	1-163-229-11	CERAMIC CHIP	12PF	C579	1-164-232-11	CERAMIC CHIP	0.01uF	
C213	1-164-346-11	CERAMIC CHIP	1uF	C580	1-126-967-11	ELECT	47uF	
C214	1-164-232-11	CERAMIC CHIP	0.01uF	C581	1-164-161-11	CERAMIC CHIP	0.0022uF	
C240	1-163-005-11	CERAMIC CHIP	470PF	C582	1-163-017-00	CERAMIC CHIP	0.0047uF	
C251	1-164-004-11	CERAMIC CHIP	0.1uF	C583	1-163-009-11	CERAMIC CHIP	0.001uF	
C253	1-124-464-11	ELECT	0.22uF	C584	1-126-961-11	ELECT	2.2uF	
C254	1-126-154-11	ELECT	47uF	C598	1-163-016-00	CERAMIC CHIP	0.0039uF	
C255	1-164-232-11	CERAMIC CHIP	0.01uF	C599	1-163-011-11	CERAMIC CHIP	0.0015uF	
C261	1-124-635-00	ELECT	220uF	C601	1-104-760-11	CERAMIC CHIP	0.0047uF	
C262	1-163-009-11	CERAMIC CHIP	0.001uF	C602	1-126-157-11	ELECT	10uF	
				</				

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C603	1-163-037-11	CERAMIC CHIP	0.022uF 10%	C722	1-126-967-11	ELECT	47uF 20%
C604	1-126-163-11	ELECT	4.7uF 20%	C723	1-126-964-11	ELECT	10uF 20%
C605	1-126-154-11	ELECT	47uF 20%	C724	1-126-163-11	ELECT	4.7uF 20%
C606	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C725	1-126-163-11	ELECT	4.7uF 20%
C607	1-124-584-00	ELECT	100uF 10V	C726	1-126-967-11	ELECT	47uF 20%
C608	1-137-372-11	FILM	0.022uF 50V	C727	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C609	1-126-967-11	ELECT	47uF 10V	C728	1-126-967-11	ELECT	47uF 20%
C610	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C729	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C611	1-163-037-11	CERAMIC CHIP	0.022uF 25V	C730	1-128-551-11	ELECT	22uF 20%
C612	1-126-963-11	ELECT	4.7uF 50V	C731	1-126-964-11	ELECT	10uF 20%
C613	1-126-964-11	ELECT	10uF 50V	C732	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C614	1-126-962-11	ELECT	3.3uF 50V	C733	1-126-963-11	ELECT	4.7uF 20%
C615	1-126-962-11	ELECT	3.3uF 50V	C734	1-126-963-11	ELECT	4.7uF 20%
C616	1-128-551-11	ELECT	22uF 25V	C735	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C617	1-126-967-11	ELECT	47uF 16V	C736	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C618	1-126-960-11	ELECT	1uF 50V	C737	1-124-589-11	ELECT	47uF 16V
C619	1-137-370-11	FILM	0.01uF 50V	C738	1-126-157-11	ELECT	10uF 16V
C620	1-126-963-11	ELECT	4.7uF 50V	C739	1-126-157-11	ELECT	10uF 16V
C621	1-163-014-00	CERAMIC CHIP	0.0027uF 5%	C740	1-124-589-11	ELECT	47uF 16V
C622	1-163-143-00	CERAMIC CHIP	0.0012uF 5%	C741	1-115-871-11	ELECT	1uF 50V
C623	1-126-961-11	ELECT	2.2uF 50V	C742	1-115-871-11	ELECT	1uF 20%
C624	1-163-275-11	CERAMIC CHIP	0.001uF 50V	C744	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C625	1-163-275-11	CERAMIC CHIP	0.001uF 50V	C747	1-163-251-11	CERAMIC CHIP	100PF 50V
C626	1-163-145-00	CERAMIC CHIP	0.0015uF 50V	C751	1-163-251-11	CERAMIC CHIP	100PF 50V
C627	1-163-145-00	CERAMIC CHIP	0.0015uF 50V	C755	1-164-004-11	CERAMIC CHIP	0.1uF 25V
C628	1-124-455-00	ELECT	100uF 16V	C802	1-163-235-11	CERAMIC CHIP	22PF 50V
C629	1-124-584-00	ELECT	100uF 10V	C803	1-163-229-11	CERAMIC CHIP	12PF 50V
C630	1-126-205-11	ELECT CHIP	47uF 6.3V	C804	1-163-229-11	CERAMIC CHIP	12PF 50V
C651	1-137-612-11	FILM	0.0068uF 100V	C806	1-128-057-11	ELECT	330uF 6.3V
C652	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C807	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C653	1-163-011-11	CERAMIC CHIP	0.0015uF 50V	C809	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C654	1-137-453-11	FILM	560PF 5%	C810	1-126-926-11	ELECT	1000uF 10V
C655	1-104-697-11	FILM	0.047uF 5%	C811	1-164-004-11	CERAMIC CHIP	0.1uF 25V
C656	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C812	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C657	1-163-011-11	CERAMIC CHIP	0.0015uF 50V	C813	1-126-513-11	ELECT	47uF 20%
C658	1-124-455-00	ELECT	100uF 16V	C819	1-164-004-11	CERAMIC CHIP	0.1uF 25V
C659	1-124-455-00	ELECT	100uF 16V	C820	1-164-346-11	CERAMIC CHIP	1uF 16V
C660	1-163-145-00	CERAMIC CHIP	0.0015uF 50V	C920	1-126-791-11	ELECT	10uF 16V
C661	1-124-589-11	ELECT	47uF 16V	C921	1-126-791-11	ELECT	10uF 16V
C701	1-126-964-11	ELECT	10uF 50V	C922	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C702	1-126-964-11	ELECT	10uF 50V	C923	1-163-038-00	CERAMIC CHIP	0.1uF 25V
C703	1-126-967-11	ELECT	47uF 10V	C924	1-126-967-11	ELECT	47uF 20%
C704	1-126-967-11	ELECT	47uF 10V	C925	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C705	1-164-004-11	CERAMIC CHIP	0.1uF 25V	C926	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C706	1-126-967-11	ELECT	47uF 16V	C927	1-126-967-11	ELECT	47uF 20%
C707	1-126-967-11	ELECT	47uF 10V	C928	1-163-227-11	CERAMIC CHIP	10PF 50V
C708	1-126-964-11	ELECT	10uF 50V	C929	1-163-102-00	CERAMIC CHIP	24PF 50V
C709	1-126-964-11	ELECT	10uF 50V	C930	1-163-235-11	CERAMIC CHIP	22PF 50V
C710	1-124-290-00	ELECT	47uF 10V	C931	1-163-239-11	CERAMIC CHIP	33PF 50V
C711	1-126-964-11	ELECT	10uF 50V	C932	1-126-961-11	ELECT	2.2uF 20%
C712	1-126-964-11	ELECT	10uF 50V	C934	1-164-343-11	CERAMIC CHIP	0.056uF 25V
C713	1-126-964-11	ELECT	10uF 50V	C935	1-163-037-11	CERAMIC CHIP	0.022uF 25V
C714	1-126-964-11	ELECT	10uF 50V	C936	1-163-139-00	CERAMIC CHIP	820PF 50V
C715	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C937	1-126-960-11	ELECT	1uF 20%
C716	1-126-964-11	ELECT	10uF 50V	C938	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C717	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C939	1-126-967-11	ELECT	47uF 20%
C718	1-126-963-11	ELECT	4.7uF 50V	C940	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C719	1-126-967-11	ELECT	47uF 10V	C953	1-164-232-11	CERAMIC CHIP	0.01uF 50V
C720	1-126-963-11	ELECT	4.7uF 50V	C955	1-126-916-11	ELECT	1000uF 6.3V
C721	1-164-232-11	CERAMIC CHIP	0.01uF 50V	C957	1-126-926-11	ELECT	1000uF 20%

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C959	1-164-232-11	CERAMIC CHIP	0.01uF	D903	8-719-421-59	DIODE MA3075WA-(TX)	
C961	1-126-967-11	ELECT	47uF	D905	8-719-801-78	DIODE 1SS184	
C966	1-126-967-11	ELECT	47uF			< FILTER >	
C967	1-164-232-11	CERAMIC CHIP	0.01uF	FL002	1-236-163-11	ENCAPSULATED COMPONENT	
C968	1-164-232-11	CERAMIC CHIP	0.01uF	FL004	1-236-163-11	ENCAPSULATED COMPONENT	
						< IC >	
C975	1-164-232-11	CERAMIC CHIP	0.01uF	IC051	8-759-702-02	IC NJM062M	
C976	1-164-232-11	CERAMIC CHIP	0.01uF	IC071	8-759-294-26	IC BA6209-V2	
C978	1-163-239-11	CERAMIC CHIP	33PF	IC101	8-759-246-14	IC TA8823N	
C979	1-164-232-11	CERAMIC CHIP	0.01uF	IC201	8-752-878-82	IC CXP87240A-039Q	
C986	1-115-339-11	CERAMIC CHIP	0.1uF	IC271	8-759-097-80	IC HD49783FP-T1	
C987	1-104-905-11	CAPACITOR	0.22F				
						< CONNECTOR >	
* CN002	1-766-538-11	CONNECTOR, BOARD TO BOARD 8P		IC301	8-759-289-73	IC SDA5649X-GEG	
* CN003	1-766-537-11	CONNECTOR (HMD) 5P		IC401	8-759-054-12	IC PQ09RF11	
* CN004	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P		IC407	8-759-189-48	IC PQ12RE11	
* CN006	1-573-128-11	PIN, CONNECTOR 5P		IC601	8-759-365-31	IC XLH7779K-E2	
* CN101	1-564-028-00	PIN, CONNECTOR 3P		IC602	8-759-089-84	IC BA7755AF-T1	
CN102	1-506-468-11	PIN, CONNECTOR 3P		IC701	8-759-700-65	IC NJM79L05A	
CN301	1-573-852-11	CONNECTOR, BOARD TO BOARD 20P		IC702	8-759-426-79	IC SN761263APG-S	
CN302	1-573-852-11	CONNECTOR, BOARD TO BOARD 20P		IC705	8-759-084-76	IC MM1111XFF	
CN400	1-506-480-11	PIN, CONNECTOR 15P		IC706	8-759-084-76	IC MM1111XFF	
CN401	1-569-901-11	SOCKET, CONNECTOR 5P		IC801	8-752-883-58	IC CXP87360-049Q	
* CN403	1-568-942-11	PIN, CONNECTOR 4P		IC802	8-759-248-87	IC MM1256XF-BE	
CN404	1-569-920-11	SOCKET, CONNECTOR 28P		IC901	8-759-460-57	IC MB90089PF-G-187-BND-ER	
CN601	1-506-468-11	PIN, CONNECTOR 3P		IC902	8-759-164-09	IC LA7218M-TE-R	
CN602	1-506-469-11	PIN, CONNECTOR 4P		IC912	8-759-084-76	IC MM1111XFF (B)	
CN702	1-569-945-31	SOCKET, CONNECTOR 29P				< JACK >	
* CN705	1-568-788-21	PIN, CONNECTOR 11P		J901	1-764-592-41	JACK 3P (VIDEO, AUDIO LINE OUT)	
CN707	1-569-932-31	SOCKET, CONNECTOR 15P		J902	1-778-773-11	TERMINAL, S (S VIDEO LINE OUT)	
CN708	1-569-939-31	SOCKET, CONNECTOR 23P				< JUMPER RESISTOR >	
△ CP402	1-473-502-11	CONVERTER UNIT, DC/DC		JS401	1-216-295-00	METAL CHIP 0 5% 1/10W	
				JS902	1-216-295-00	METAL CHIP 0 5% 1/10W	(AS, MN, NP, NR, UX, VC)
						< COIL >	
CT801	1-141-443-11	CAP, CERAMIC TRIMMER 30PF		L051	1-412-963-11	INDUCTOR	100uH
				L101	1-410-482-31	INDUCTOR	100uH
				L202	1-414-398-11	INDUCTOR	10uH
				L271	1-412-963-11	INDUCTOR	100uH
				L301	1-412-958-21	INDUCTOR	39uH
D001	8-719-210-33	DIODE EC10DS2		L401	1-414-404-11	INDUCTOR	100uH
D010	8-719-404-49	DIODE MA111		L413	1-410-385-11	INDUCTOR CHIP	22uH
D051	8-719-404-49	DIODE MA111		L414	1-414-392-21	INDUCTOR	1uH
D071	8-719-422-97	DIODE MA8091-M		L415	1-414-392-21	INDUCTOR	1uH
D203	8-719-210-33	DIODE EC10DS2		L503	1-414-398-11	INDUCTOR	10uH
D205	8-719-404-49	DIODE MA111		L507	1-410-482-31	INDUCTOR	100uH
D261	8-719-048-26	DIODE GL528V1		L512	1-414-402-11	INDUCTOR	47uH
D265	8-719-422-62	DIODE MA8062-L-TX		L513	1-410-478-11	INDUCTOR	47uH
D267	8-719-422-62	DIODE MA8062-L-TX		L521	1-412-943-11	INDUCTOR	2.2uH
D403	8-719-210-33	DIODE EC10DS2		L522	1-412-943-11	INDUCTOR	2.2uH
D405	8-719-106-31	DIODE RD8.2M-B1		L651	1-410-687-11	INDUCTOR	1.2mH
D501	8-719-976-XX	DIODE UD2-TE-17-5.1B		L652	1-410-687-11	INDUCTOR	1.2mH
D502	8-719-988-62	DIODE 1SS355		L701	1-414-398-11	INDUCTOR	10uH
D512	8-719-042-79	DIODE MA8300-H-TX		L702	1-414-398-11	INDUCTOR	10uH
D513	8-719-404-49	DIODE MA111		L801	1-414-398-11	INDUCTOR	10uH
D601	8-719-404-49	DIODE MA111					
D701	8-719-106-31	DIODE RD8.2M-B1					
D801	8-719-951-30	DIODE ERA91-02					
D802	8-719-210-33	DIODE EC10DS2					
D901	8-719-421-59	DIODE MA3075WA-(TX)					

Note : The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
L901	1-414-398-11	INDUCTOR 10uH		Q705	8-729-421-19	TRANSISTOR UN2213	
L902	1-410-385-11	INDUCTOR CHIP 22uH		Q706	8-729-421-19	TRANSISTOR UN2213	
L903	1-414-392-21	INDUCTOR 1uH		Q707	8-729-106-68	TRANSISTOR 2SD1615A-GP	
L905	1-414-398-11	INDUCTOR 10uH		Q801	8-729-424-08	TRANSISTOR UN2111	
L907	1-412-957-11	INDUCTOR 33uH (B)		Q802	8-729-424-59	TRANSISTOR UN2212	
		< PHOTO INTERRUPTER >		Q901	8-729-010-25	TRANSISTOR MSD601-RT1	
PH261	8-749-010-19	PHOTO INTERRUPTER GP3S113		Q902	8-729-010-25	TRANSISTOR MSD601-RT1	
PH262	8-749-010-20	PHOTO INTERRUPTER GP3S114		Q903	8-729-010-05	TRANSISTOR MSB709-RT1	
		< IC LINK >		Q904	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L	
				Q905	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L	
Δ PS001	1-532-675-21	LINK, IC		Q911	8-729-010-05	TRANSISTOR MSB709-RT1	
Δ PS002	1-532-727-11	LINK, IC 0.25A		Q913	8-729-010-05	TRANSISTOR MSB709-RT1	
Δ PS401	1-532-685-00	LINK, IC		Q915	8-729-010-05	TRANSISTOR MSB709-RT1	
Δ PS601	1-532-605-00	LINK, IC 0.4A		Q920	8-729-010-25	TRANSISTOR MSD601-RT1	
		< THERMISTOR >		Q921	8-729-421-19	TRANSISTOR UN2213	
Δ PTH601	1-202-855-00	THERMISTOR, POSITIVE		Q922	8-729-424-18	TRANSISTOR UN2113	
		< TRANSISTOR >		Q924	8-729-028-70	TRANSISTOR UN225T-(TX)	
Q004	8-729-140-93	TRANSISTOR 2SB733-34		Q925	8-729-010-25	TRANSISTOR MSD601-RT1 (B)	
Q005	8-729-421-19	TRANSISTOR UN2213		Q926	8-729-421-19	TRANSISTOR UN2213 (B)	
Q007	8-729-010-05	TRANSISTOR MSB709-RT1		Q927	8-729-028-70	TRANSISTOR UN225T-(TX)	
Q254	8-729-422-29	TRANSISTOR 2SD601A-S		Q928	8-729-028-70	TRANSISTOR UN225T-(TX)	
Q261	8-729-025-92	PHOTO TRANSISTOR PT380F		Q929	8-729-028-70	TRANSISTOR UN225T-(TX)	
Q262	8-729-025-92	PHOTO TRANSISTOR PT380F		R010	1-216-689-11	METAL CHIP 39K	0.5%
Q263	8-729-921-12	TRANSISTOR 2SD1834		R011	1-216-073-00	METAL CHIP 10K	5%
Q301	8-729-010-25	TRANSISTOR MSD601-RT1		R012	1-216-065-00	METAL CHIP 4.7K	5%
Q302	8-729-010-25	TRANSISTOR MSD601-RT1		R013	1-216-065-00	METAL CHIP 4.7K	5%
Q303	8-729-010-05	TRANSISTOR MSB709-RT1		R051	1-216-089-91	METAL GLAZE 47K	5%
Q304	8-729-010-25	TRANSISTOR MSD601-RT1		R052	1-216-089-91	METAL GLAZE 47K	5%
Q305	8-729-010-05	TRANSISTOR MSB709-RT1		R053	1-216-089-91	METAL GLAZE 47K	5%
Q306	8-729-010-05	TRANSISTOR MSB709-RT1		R054	1-216-089-91	METAL GLAZE 47K	5%
Q502	8-729-010-05	TRANSISTOR MSB709-RT1		R056	1-216-689-11	METAL CHIP 39K	0.5%
Q505	8-729-028-70	TRANSISTOR UN225T-(TX)		R057	1-216-073-00	METAL CHIP 10K	5%
Q506	8-729-421-22	TRANSISTOR UN2211		R058	1-216-049-00	METAL CHIP 1K	5%
Q507	8-729-028-70	TRANSISTOR UN225T-(TX)		R062	1-216-057-00	METAL CHIP 2.2K	5%
Q509	8-729-028-70	TRANSISTOR UN225T-(TX)		R063	1-216-057-00	METAL CHIP 2.2K	5%
Q512	8-729-230-49	TRANSISTOR 2SC2712-YG		R064	1-216-103-00	METAL CHIP 180K	5%
Q513	8-729-010-05	TRANSISTOR MSB709-RT1		R065	1-216-073-00	METAL CHIP 10K	5%
Q515	8-729-010-05	TRANSISTOR MSB709-RT1		R066	1-216-295-00	METAL CHIP 0	5%
Q516	8-729-010-25	TRANSISTOR MSD601-RT1		R073	1-216-065-00	METAL CHIP 4.7K	5%
Q517	8-729-421-19	TRANSISTOR UN2213		R074	1-216-083-00	METAL CHIP 27K	5%
Q518	8-729-421-19	TRANSISTOR UN2213		R075	1-216-056-00	METAL GLAZE 2K	5%
Q520	8-729-421-22	TRANSISTOR UN2211		R076	1-216-093-00	METAL CHIP 68K	5%
Q521	8-729-026-49	TRANSISTOR 2SA1037AK-T146-QR		R077	1-216-068-00	METAL CHIP 6.2K	5%
Q522	8-729-027-59	TRANSISTOR DTC144EKA-T146		R078	1-216-075-00	METAL CHIP 12K	5%
Q523	8-729-106-68	TRANSISTOR 2SD1615A-GP		R092	1-216-295-00	METAL CHIP 0	5%
Q552	8-729-424-18	TRANSISTOR UN2113		R094	1-216-296-00	METAL CHIP 0	5%
Q601	8-729-820-68	TRANSISTOR 2SD1802FA-S		R095	1-216-296-00	METAL CHIP 0	5%
Q602	8-729-804-41	TRANSISTOR 2SB1122-S		R096	1-216-296-00	METAL CHIP 0	5%
Q651	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q		R099	1-216-296-00	METAL CHIP 0	5%
Q652	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q		R101	1-216-119-00	METAL CHIP 820K	5%
Q653	8-729-900-51	TRANSISTOR DTA114TK		R102	1-216-093-00	METAL CHIP 68K	5%
Q654	8-729-900-51	TRANSISTOR DTA114TK		R103	1-216-097-91	METAL GLAZE 100K	5%
Q655	8-729-010-25	TRANSISTOR MSD601-RT1		R104	1-216-097-91	METAL GLAZE 100K	5%
Q701	8-729-010-05	TRANSISTOR MSB709-RT1		R105	1-216-085-00	METAL CHIP 33K	5%
Q702	8-729-010-05	TRANSISTOR MSB709-RT1		R106	1-216-065-00	METAL CHIP 4.7K	5%
Q703	8-729-010-05	TRANSISTOR MSB709-RT1		R107	1-216-037-00	METAL CHIP 330	5%
Q704	8-729-010-05	TRANSISTOR MSB709-RT1		R112	1-216-113-00	METAL CHIP 470K	5%

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Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R113	1-216-089-91	METAL GLAZE	47K	5%	1/10W		
R114	1-216-295-00	METAL CHIP	0	5%	1/10W		
R202	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R203	1-216-041-00	METAL CHIP	470	5%	1/10W		
R204	1-216-107-00	METAL CHIP	270K	5%	1/10W		
R205	1-216-095-00	METAL CHIP	82K	5%	1/10W		
R208	1-216-295-00	METAL CHIP	0	5%	1/10W		
R211	1-216-041-00	METAL CHIP	470	5%	1/10W		
R212	1-216-295-00	METAL CHIP	0	5%	1/10W		
R213	1-216-081-00	METAL CHIP	22K	5%	1/10W		
R215	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		
R216	1-216-295-00	METAL CHIP	0	5%	1/10W		
R217	1-216-295-00	METAL CHIP	0	5%	1/10W		
R218	1-216-041-00	METAL CHIP	470	5%	1/10W		
R219	1-216-295-00	METAL CHIP	0	5%	1/10W		
R220	1-216-295-00	METAL CHIP	0	5%	1/10W		
R225	1-216-089-91	METAL GLAZE	47K	5%	1/10W		
R228	1-216-041-00	METAL CHIP	470	5%	1/10W		
R229	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R230	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R231	1-216-295-00	METAL CHIP	0	5%	1/10W		
R232	1-216-041-00	METAL CHIP	470	5%	1/10W		
R233	1-216-041-00	METAL CHIP	470	5%	1/10W		
R234	1-216-041-00	METAL CHIP	470	5%	1/10W		
R235	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R236	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R237	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R238	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R239	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R241	1-216-077-00	METAL CHIP	15K	5%	1/10W		
R242	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R243	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R244	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R245	1-216-077-00	METAL CHIP	15K	5%	1/10W		
R253	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R254	1-216-065-00	METAL CHIP	4.7K	5%	1/10W		
R255	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R256	1-249-400-11	CARBON	39	5%	1/4W F		
R257	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		
R258	1-216-689-11	METAL CHIP	39K	0.5%	1/10W		
R260	1-216-041-00	METAL CHIP	470	5%	1/10W		
R261	1-216-041-00	METAL CHIP	470	5%	1/10W		
R262	1-249-400-11	CARBON	39	5%	1/4W F		
R264	1-216-107-00	METAL CHIP	270K	5%	1/10W		
R265	1-216-107-00	METAL CHIP	270K	5%	1/10W		
R266	1-249-413-11	CARBON	470	5%	1/4W F		
R267	1-216-089-91	METAL GLAZE	47K	5%	1/10W		
R268	1-216-089-91	METAL GLAZE	47K	5%	1/10W		
R270	1-216-089-00	METAL CHIP	6.8K	5%	1/10W		
R271	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R272	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R273	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R274	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R275	1-216-063-91	METAL GLAZE	3.9K	5%	1/10W		
R276	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R277	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R278	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R279	1-216-089-00	METAL CHIP	6.8K	5%	1/10W		
R280	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R281	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R282	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R283	1-216-077-00	METAL CHIP	15K	5%	1/10W		
R284	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R292	1-216-296-00	METAL CHIP	0	5%	1/8W		
R298	1-216-085-00	METAL CHIP	33K	5%	1/10W		
R299	1-216-095-00	METAL CHIP	82K	5%	1/10W		
R301	1-216-085-00	METAL CHIP	33K	5%	1/10W		
R302	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R303	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R304	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R305	1-216-045-00	METAL CHIP	680	5%	1/10W		
R306	1-216-295-00	METAL CHIP	0	5%	1/10W		
R307	1-216-295-00	METAL CHIP	0	5%	1/10W		
R308	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		
R309	1-216-047-91	METAL GLAZE	820	5%	1/10W		
R310	1-216-029-00	METAL CHIP	150	5%	1/10W		
R311	1-216-035-00	METAL CHIP	270	5%	1/10W		
R312	1-216-295-00	METAL CHIP	0	5%	1/10W		
R313	1-216-295-00	METAL CHIP	0	5%	1/10W		
R314	1-216-295-00	METAL CHIP	0	5%	1/10W		
R315	1-216-295-00	METAL CHIP	0	5%	1/10W		
R316	1-216-295-00	METAL CHIP	0	5%	1/10W		
R317	1-216-097-91	METAL GLAZE	100K	5%	1/10W		
R318	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		
R319	1-216-117-00	METAL CHIP	680K	5%	1/10W		
R321	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R322	1-216-123-11	METAL CHIP	1.2M	5%	1/10W		
R323	1-216-069-00	METAL CHIP	6.8K	5%	1/10W		
R324	1-216-123-11	METAL CHIP	1.2M	5%	1/10W		
R325	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R326	1-216-083-00	METAL CHIP	27K	5%	1/10W		
R327	1-216-079-00	METAL CHIP	18K	5%	1/10W		
R328	1-216-025-91	METAL GLAZE	100	5%	1/10W		
R330	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R331	1-216-045-00	METAL CHIP	680	5%	1/10W		
R332	1-216-045-00	METAL CHIP	680	5%	1/10W		
R333	1-216-107-00	METAL CHIP	270K	5%	1/10W		
R407	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R408	1-216-295-00	METAL CHIP	0	5%	1/10W		
R421	1-216-113-00	METAL CHIP	470K	5%	1/10W		
R468	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R496	1-216-295-00	METAL CHIP	0	5%	1/10W		
R497	1-216-295-00	METAL CHIP	0	5%	1/10W		
R499	1-216-296-00	METAL CHIP	0	5%	1/8W		
R504	1-216-113-00	METAL CHIP	470K	5%	1/10W		
R505	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R506	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R507	1-216-049-00	METAL CHIP	1K	5%	1/10W		
R508	1-216-295-00	METAL CHIP	0	5%	1/10W		
R509	1-216-295-00	METAL CHIP	0	5%	1/10W		
R546	1-208-845-11	METAL GLAZE	1M	5%	1/10W		
R547	1-216-073-00	METAL CHIP	10K	5%	1/10W		
R560	1-216-083-00	METAL CHIP	27K	5%	1/10W		
R560	1-216-105-91	METAL GLAZE	220K	5%	1/10W		
R561	1-216-041-00	METAL CHIP	470	5%	1/10W		
R562	1-216-041-00	METAL CHIP	470	5%	1/10W		
R563	1-216-061-00	METAL CHIP	3.3K	5%	1/10W		
R564	1-216-057-00	METAL CHIP	2.2K	5%	1/10W		

(AS,MN,NP,NR,UX,VC)

(B)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R566	1-216-061-00	METAL CHIP	3.3K	R663	1-216-041-00	METAL CHIP	470
R573	1-216-057-00	METAL CHIP	2.2K	R664	1-216-295-00	METAL CHIP	0
R574	1-216-057-00	METAL CHIP	2.2K	R668	1-216-295-00	METAL CHIP	0
R575	1-216-085-00	METAL CHIP	33K	R670	1-216-174-00	METAL GLAZE	100
R576	1-216-222-00	METAL GLAZE	10K	R671	1-216-025-91	METAL GLAZE	100
R577	1-216-222-00	METAL GLAZE	10K	R672	1-216-025-91	METAL GLAZE	100
R578	1-216-057-00	METAL CHIP	2.2K	R673	1-216-025-91	METAL GLAZE	100
R579	1-216-055-00	METAL CHIP	1.8K	R674	1-216-025-91	METAL GLAZE	100
R580	1-216-025-91	METAL GLAZE	100	R675	1-216-025-91	METAL GLAZE	100
R581	1-216-053-00	METAL CHIP	1.5K	R681	1-216-113-00	METAL CHIP	470K
R583	1-216-047-91	METAL GLAZE	820	R683	1-216-061-00	METAL CHIP	3.3K
R586	1-216-073-00	METAL CHIP	10K	R685	1-216-295-00	METAL CHIP	0
R587	1-216-073-00	METAL CHIP	10K	R701	1-216-049-00	METAL CHIP	1K
R588	1-216-065-00	METAL CHIP	4.7K	R702	1-216-049-00	METAL CHIP	1K
R591	1-216-063-91	METAL GLAZE	3.9K	R703	1-208-782-11	METAL GLAZE	1K
R594	1-216-025-91	METAL GLAZE	100	R704	1-208-782-11	METAL GLAZE	1K
R595	1-216-041-00	METAL CHIP	470	R705	1-216-073-00	METAL CHIP	10K
R596	1-216-041-00	METAL CHIP	470	R706	1-208-782-11	METAL GLAZE	1K
R597	1-216-053-00	METAL CHIP	1.5K	R707	1-208-782-11	METAL GLAZE	1K
R598	1-216-049-00	METAL CHIP	1K	R708	1-216-057-00	METAL CHIP	2.2K
R599	1-216-059-00	METAL CHIP	2.7K	R709	1-216-041-00	METAL CHIP	470
R601	1-216-049-00	METAL CHIP	1K	R710	1-216-041-00	METAL CHIP	470
R602	1-216-049-00	METAL CHIP	1K	R711	1-216-097-91	METAL GLAZE	100K
R603	1-216-073-00	METAL CHIP	10K	R712	1-216-097-91	METAL GLAZE	100K
R604	1-216-050-00	METAL GLAZE	1.1K	R713	1-216-053-00	METAL CHIP	1.5K
R605	1-216-079-00	METAL CHIP	18K	R714	1-216-053-00	METAL CHIP	1.5K
R606	1-216-067-00	METAL CHIP	5.6K	R715	1-216-053-00	METAL CHIP	1.5K
R607	1-208-808-11	METAL GLAZE	12K	R716	1-216-053-00	METAL CHIP	1.5K
R608	1-216-081-00	METAL CHIP	22K	R717	1-216-041-00	METAL CHIP	470
R609	1-208-804-11	METAL GLAZE	8.2K	R718	1-216-041-00	METAL CHIP	470
R610	1-216-079-00	METAL CHIP	18K	R719	1-216-037-00	METAL CHIP	330
R611	1-216-067-00	METAL CHIP	5.6K	R720	1-216-061-00	METAL CHIP	3.3K
R613	1-216-050-00	METAL GLAZE	1.1K	R721	1-216-065-00	METAL CHIP	4.7K
R614	1-216-129-00	METAL CHIP	2.2M	R723	1-208-782-11	METAL GLAZE	1K
R615	1-216-069-00	METAL CHIP	6.8K	R724	1-208-782-11	METAL GLAZE	1K
R616	1-216-073-00	METAL CHIP	10K	R725	1-216-073-00	METAL CHIP	10K
R617	1-216-109-00	METAL CHIP	330K	R726	1-208-793-11	METAL GLAZE	3K
R618	1-216-041-00	METAL CHIP	470	R727	1-208-782-11	METAL GLAZE	1K
R619	1-216-089-91	METAL GLAZE	47K	R728	1-216-073-00	METAL CHIP	10K
R620	1-216-099-00	METAL CHIP	120K	R801	1-216-109-00	METAL CHIP	330K
R621	1-216-081-00	METAL CHIP	22K	R803	1-216-057-00	METAL CHIP	2.2K
R622	1-216-083-00	METAL CHIP	27K	R804	1-216-073-00	METAL CHIP	10K
R623	1-216-065-00	METAL CHIP	4.7K	R805	1-216-073-00	METAL CHIP	10K
R624	1-216-073-00	METAL CHIP	10K	R806	1-216-073-00	METAL CHIP	10K
R625	1-216-278-11	METAL GLAZE	2.2M	R807	1-216-073-00	METAL CHIP	10K
R626	1-216-069-00	METAL CHIP	6.8K	R808	1-216-073-00	METAL CHIP	10K
R627	1-216-057-00	METAL CHIP	2.2K	R809	1-216-073-00	METAL CHIP	10K
R628	1-216-025-91	METAL GLAZE	100	R811	1-216-017-91	METAL GLAZE	47
R629	1-216-025-91	METAL GLAZE	100	R812	1-216-113-00	METAL CHIP	470K
R630	1-216-113-00	METAL CHIP	470K	R813	1-216-041-00	METAL CHIP	470
R651	1-216-081-00	METAL CHIP	22K	R814	1-216-095-00	METAL CHIP	82K
R652	1-249-395-11	CARBON	15	R818	1-216-041-00	METAL CHIP	470
R653	1-216-073-00	METAL CHIP	10K	R819	1-216-089-91	METAL GLAZE	47K
R654	1-216-083-00	METAL CHIP	27K	R822	1-216-041-00	METAL CHIP	470
R655	1-249-394-11	CARBON	12	R823	1-216-041-00	METAL CHIP	470
R656	1-216-295-00	METAL CHIP	0	R826	1-216-041-00	METAL CHIP	470
R657	1-216-089-91	METAL GLAZE	47K	R827	1-216-049-00	METAL CHIP	1K
R659	1-216-073-00	METAL CHIP	10K	R828	1-216-041-00	METAL CHIP	470
R661	1-216-073-00	METAL CHIP	10K	R829	1-216-041-00	METAL CHIP	470
R662	1-216-041-00	METAL CHIP	470	R830	1-216-041-00	METAL CHIP	470

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
Δ F301	1-532-203-00	FUSE < FUSE HOLDER >	C133	1-162-970-11	CERAMIC CHIP 0.01uF	25V
			C134	1-162-964-11	CERAMIC CHIP 0.001uF	10% 50V
			C135	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
			C136	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
			C137	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
FH301	1-533-223-11	HOLDER, FUSE	C138	1-164-004-11	CERAMIC CHIP 0.1uF	10% 25V
FH302	1-533-223-11	HOLDER, FUSE	C139	1-162-968-11	CERAMIC CHIP 0.0047uF	10% 50V
			C141	1-104-852-11	TANTAL. CHIP 22uF	20% 6.3V
			C142	1-164-156-11	CERAMIC CHIP 0.1uF	25V
IC402	8-759-513-71	IC P005RF21	C143	1-162-970-11	CERAMIC CHIP 0.01uF	10% 25V
					< CONNECTOR >	
L401	1-411-880-21	COIL, CHOKE 47uH	CN101	1-766-341-21	CONNECTOR, FFC/FPC 11P	
L403	1-411-878-21	COIL, CHOKE 10uH	CN102	1-770-700-11	CONNECTOR, FFC/FPC 17P	
L404	1-406-659-11	COIL, CHOKE 10uH	CN301	1-766-340-21	CONNECTOR, FFC/FPC 10P	
			CN302	1-770-690-11	CONNECTOR, FFC/FPC 7P	
					< DIODE >	
Δ LF301	1-403-599-11	FILTER, LINE 33MH	D101	8-719-059-51	DIODE MA3J142E0LSO	
Δ LF302	1-403-599-11	FILTER, LINE 33MH			< IC >	
					< IC LINK >	
Δ PS401	1-532-984-11	LINK, IC	IC101	8-752-069-78	IC CXA1704R-T4	
Δ PS410	1-532-605-00	LINK, IC 0.4A			< COIL >	
					< RESISTOR >	
Δ R301	1-202-724-00	SOLID 2.7M	L101	1-412-066-21	INDUCTOR CHIP 220uH	
Δ R305	1-217-294-00	WIREWOUND 4.7	L102	1-412-951-11	INDUCTOR 10uH	
R404	1-216-089-91	METAL GLAZE 47K	L103	1-412-066-21	INDUCTOR CHIP 220uH	
R405	1-216-295-00	METAL CHIP 0	L104	1-412-066-21	INDUCTOR CHIP 220uH	
			L106	1-412-060-11	INDUCTOR CHIP 22uH	
					< TRANSISTOR >	
*	A-7066-885-A	RP-211 (T) BOARD, COMPLETE ***** (Ref.No.: 1,000 Series)	Q101	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
			Q102	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
			Q103	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
			Q104	8-729-402-42	TRANSISTOR UN5213	
			Q105	8-729-402-42	TRANSISTOR UN5213	
					< CAPACITOR >	
C102	1-164-004-11	CERAMIC CHIP 0.1uF	Q106	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
C103	1-162-927-11	CERAMIC CHIP 100PF	Q107	8-729-230-63	TRANSISTOR 2SC4116-YG	
C104	1-162-926-11	CERAMIC CHIP 82PF	Q108	8-729-230-63	TRANSISTOR 2SC4116-YG	
C105	1-164-217-11	CERAMIC CHIP 150PF	Q109	8-729-402-42	TRANSISTOR UN5213	
C106	1-162-927-11	CERAMIC CHIP 100PF			< RESISTOR >	
C108	1-162-911-11	CERAMIC CHIP 6PF	R101	1-216-839-11	METAL CHIP 33K	5% 1/16W
C109	1-162-970-11	CERAMIC CHIP 0.01uF	R102	1-216-837-11	METAL CHIP 22K	5% 1/16W
C110	1-162-970-11	CERAMIC CHIP 0.01uF	R103	1-216-813-11	METAL CHIP 220	5% 1/16W
C111	1-164-227-11	CERAMIC CHIP 0.022uF	R104	1-216-814-11	METAL CHIP 270	5% 1/16W
C112	1-164-227-11	CERAMIC CHIP 0.022uF	R105	1-216-829-11	METAL CHIP 4.7K	5% 1/16W
C113	1-162-970-11	CERAMIC CHIP 0.01uF				
C114	1-164-156-11	CERAMIC CHIP 0.1uF	R106	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
C115	1-162-970-11	CERAMIC CHIP 0.01uF	R107	1-216-864-11	METAL CHIP 0	5% 1/16W
C116	1-164-156-11	CERAMIC CHIP 0.1uF	R108	1-216-864-11	METAL CHIP 0	5% 1/16W
C117	1-104-852-11	TANTAL. CHIP 22uF	R109	1-216-840-11	METAL CHIP 39K	5% 1/16W
			R110	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
C118	1-104-852-11	TANTAL. CHIP 22uF				
C119	1-162-959-11	CERAMIC CHIP 330PF	R111	1-216-807-11	METAL CHIP 68	5% 1/16W
C120	1-162-970-11	CERAMIC CHIP 0.01uF	R112	1-216-864-11	METAL CHIP 0	5% 1/16W
C122	1-135-259-11	TANTAL. CHIP 10uF	R113	1-216-840-11	METAL CHIP 39K	5% 1/16W
C123	1-162-959-11	CERAMIC CHIP 330PF	R114	1-216-825-11	METAL CHIP 2.2K	5% 1/16W
			R115	1-216-827-11	METAL CHIP 3.3K	5% 1/16W
C127	1-162-970-11	CERAMIC CHIP 0.01uF				
C128	1-162-970-11	CERAMIC CHIP 0.01uF				
C129	1-135-259-11	TANTAL. CHIP 10uF				
C130	1-162-970-11	CERAMIC CHIP 0.01uF				
C132	1-162-970-11	CERAMIC CHIP 0.01uF				

Note : The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C528	1-165-321-11	CERAMIC CHIP	0.68uF	10%	C958	1-216-295-00	METAL CHIP
C529	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C961	1-164-232-11	CERAMIC CHIP
C530	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C971	1-163-239-11	CERAMIC CHIP
C531	1-164-346-11	CERAMIC CHIP	1uF	16V	C972	1-163-259-91	CERAMIC CHIP
C532	1-164-346-11	CERAMIC CHIP	1uF	16V	C985	1-163-227-11	CERAMIC CHIP
C534	1-163-038-00	CERAMIC CHIP	0.1uF	25V	C986	1-163-231-11	CERAMIC CHIP
C536	1-164-232-11	CERAMIC CHIP	0.01uF	50V	C987	1-163-035-00	CERAMIC CHIP
C538	1-163-037-11	CERAMIC CHIP	0.022uF	10%	C988	1-164-232-11	CERAMIC CHIP
C541	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C989	1-163-035-00	CERAMIC CHIP
C542	1-163-037-11	CERAMIC CHIP	0.022uF	10%	C990	1-164-346-11	CERAMIC CHIP
C546	1-163-263-11	CERAMIC CHIP	330PF	5%	C991	1-164-346-11	CERAMIC CHIP
C547	1-163-239-11	CERAMIC CHIP	33PF	5%	C992	1-164-232-11	CERAMIC CHIP
C550	1-164-004-11	CERAMIC CHIP	0.1uF	10%	C993	1-164-232-11	CERAMIC CHIP
C551	1-164-232-11	CERAMIC CHIP	0.01uF	50V	< CONNECTOR >		
C552	1-164-232-11	CERAMIC CHIP	0.01uF	50V	CN001	1-766-986-11	CONNECTOR, FCC/FPC 13P
C562	1-164-004-11	CERAMIC CHIP	0.1uF	10%	* CN002	1-564-029-00	PIN, CONNECTOR 4P
C563	1-163-251-11	CERAMIC CHIP	100PF	5%	CN901	1-573-834-11	CONNECTOR, BOARD TO BOARD 20P
C564	1-164-232-11	CERAMIC CHIP	0.01uF	50V	CN902	1-573-834-11	CONNECTOR, BOARD TO BOARD 20P
C565	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	< DIODE >		
C570	1-163-035-00	CERAMIC CHIP	0.047uF	50V	D501	8-719-404-49	DIODE MA111
C591	1-163-222-11	CERAMIC CHIP	5PF	0.25PF	D503	8-719-404-49	DIODE MA111
C610	1-164-232-11	CERAMIC CHIP	0.01uF	50V	D505	8-719-404-49	DIODE MA111
C612	1-164-232-11	CERAMIC CHIP	0.01uF	50V	D506	8-719-801-78	DIODE 1SS184
C901	1-164-232-11	CERAMIC CHIP	0.01uF	10V	D951	8-719-800-76	DIODE 1SS226
C902	1-126-967-11	ELECT	47uF	20%	< IC >		
C903	1-124-290-00	ELECT	47uF	20%	IC001	8-759-352-17	IC HA118195NT
C904	1-126-967-11	ELECT	47uF	10V	IC051	8-759-055-49	IC AN327K
C905	1-126-967-11	ELECT	47uF	20%	IC401	8-759-333-99	IC LA7356M (B)
C910	1-164-232-11	CERAMIC CHIP	0.01uF	50V	IC451	1-809-959-12	IC TME656 (B)
C911	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	IC501	8-759-349-60	IC LA7438AM-N-MPB
C912	1-163-257-11	CERAMIC CHIP	180PF	5%	IC502	8-752-373-18	IC CXL1511M-T6
C913	1-163-243-11	CERAMIC CHIP	47PF	5%	IC931	8-759-352-18	IC M52374SP
C921	1-163-235-11	CERAMIC CHIP	22PF	5%	< COIL >		
C922	1-163-239-11	CERAMIC CHIP	33PF	5%	L021	1-410-482-31	INDUCTOR
C923	1-163-251-11	CERAMIC CHIP	100PF	5%	L022	1-410-391-11	INDUCTOR CHIP 68uH (B)
C924	1-163-127-00	CERAMIC CHIP	270PF	5%	L023	1-410-482-31	INDUCTOR
C924	1-163-251-11	CERAMIC CHIP	100PF	5%	L024	1-410-658-31	INDUCTOR CHIP 220uH
C925	1-216-295-00	METAL CHIP	0	5%	L051	1-410-482-31	INDUCTOR
C926	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L351	1-410-389-31	INDUCTOR CHIP 47uH
C927	1-163-237-11	CERAMIC CHIP	27PF	5%	L401	1-414-398-11	INDUCTOR
C928	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L502	1-410-388-31	INDUCTOR CHIP 39uH
C932	1-163-237-11	CERAMIC CHIP	27PF	5%	L503	1-410-388-31	INDUCTOR CHIP 39uH
C933	1-216-295-00	METAL CHIP	0	1/10W	L504	1-410-388-31	INDUCTOR CHIP 39uH
C935	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L505	1-410-387-11	INDUCTOR CHIP 33uH (B)
C936	1-163-009-11	CERAMIC CHIP	0.001uF	10%	L901	1-410-470-11	INDUCTOR
C937	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L902	1-414-398-11	INDUCTOR
C938	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L903	1-410-470-11	INDUCTOR
C939	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L911	1-410-655-31	INDUCTOR CHIP 120uH
C940	1-164-004-11	CERAMIC CHIP	0.1uF	10%	L921	1-410-385-11	INDUCTOR CHIP 22uH
C941	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L922	1-410-657-21	INDUCTOR CHIP 180uH (B)
C942	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L922	1-410-658-31	INDUCTOR CHIP 220uH
C946	1-126-967-11	ELECT	47uF	20%	L931	1-410-482-31	INDUCTOR
C947	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L933	1-410-390-11	INDUCTOR CHIP 56uH
C952	1-164-232-11	CERAMIC CHIP	0.01uF	50V	L952	1-412-282-41	INDUCTOR
C956	1-104-760-11	CERAMIC CHIP	0.047uF	10%	L971	1-410-380-31	INDUCTOR CHIP 8.2uH
C957	1-164-232-11	CERAMIC CHIP	0.01uF	50V	(AS,MN,NP,NR,U,X,VC)		

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remarks
		< TRANSISTOR >				
Q021	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L	R056	1-216-097-91	METAL GLAZE	100K 5% 1/10W
Q022	8-729-230-49	TRANSISTOR 2SC2712-YG	R057	1-216-035-00	METAL CHIP	270 5% 1/10W
Q093	8-729-421-19	TRANSISTOR UN2213 (B)	R058	1-216-033-00	METAL CHIP	220 5% 1/10W
Q094	8-729-421-19	TRANSISTOR UN2213 (B)	R059	1-216-035-00	METAL CHIP	270 5% 1/10W
Q095	8-729-421-19	TRANSISTOR UN2213 (B)	R061	1-216-073-00	METAL CHIP	10K 5% 1/10W
Q351	8-729-421-19	TRANSISTOR UN2213	R062	1-216-097-91	METAL GLAZE	100K 5% 1/10W
Q352	8-729-230-49	TRANSISTOR 2SC2712-YG	R097	1-216-295-00	METAL CHIP	0 5% 1/10W
Q353	8-729-230-49	TRANSISTOR 2SC2712-YG	R304	1-216-295-00	METAL CHIP	0 5% 1/10W
Q371	8-729-230-49	TRANSISTOR 2SC2712-YG	R351	1-216-041-00	METAL CHIP	470 5% 1/10W
Q503	8-729-421-19	TRANSISTOR UN2213	R352	1-216-045-00	METAL CHIP	680 5% 1/10W
Q504	8-729-421-19	TRANSISTOR UN2213	R353	1-216-041-00	METAL CHIP	470 5% 1/10W
Q505	8-729-230-49	TRANSISTOR 2SC2712-YG	R354	1-216-049-00	METAL CHIP	1K 5% 1/10W
Q506	8-729-424-08	TRANSISTOR UN2111	R355	1-216-049-00	METAL CHIP	1K 5% 1/10W
Q507	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L	R356	1-216-075-00	METAL CHIP	12K 5% 1/10W
Q508	8-729-230-49	TRANSISTOR 2SC2712-YG	R357	1-216-073-00	METAL CHIP	10K 5% 1/10W
Q509	8-729-424-56	TRANSISTOR UN211L	R358	1-216-035-00	METAL CHIP	270 5% 1/10W
Q514	8-729-230-49	TRANSISTOR 2SC2712-YG	R359	1-216-049-00	METAL CHIP	1K 5% 1/10W
Q515	8-729-421-19	TRANSISTOR UN2213	R371	1-216-295-00	METAL CHIP	0 5% 1/10W
Q518	8-729-230-49	TRANSISTOR 2SC2712-YG	R373	1-216-089-91	METAL GLAZE	47K 5% 1/10W
Q520	8-729-421-19	TRANSISTOR UN2213 (B)	R401	1-216-295-00	METAL CHIP	0 5% 1/10W (B)
Q525	8-729-421-19	TRANSISTOR UN2213	R403	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
Q610	8-729-230-49	TRANSISTOR 2SC2712-YG	R404	1-216-067-00	METAL CHIP	5.6K 5% 1/10W (B)
Q901	8-729-421-19	TRANSISTOR UN2213	R451	1-216-057-00	METAL CHIP	2.2K 5% 1/10W (B)
Q912	8-729-421-19	TRANSISTOR UN2213	R601	1-216-073-00	METAL CHIP	10K 5% 1/10W (B)
Q921	8-729-230-49	TRANSISTOR 2SC2712-YG	R502	1-216-073-00	METAL CHIP	10K 5% 1/10W
Q922	8-729-230-49	TRANSISTOR 2SC2712-YG	R503	1-208-784-11	METAL GLAZE	1.2K 0.50% 1/10W
Q932	8-729-230-49	TRANSISTOR 2SC2712-YG	R504	1-208-790-11	METAL GLAZE	2.2K 0.50% 1/10W
Q951	8-729-421-19	TRANSISTOR UN2213	R505	1-208-784-11	METAL GLAZE	1.2K 0.50% 1/10W
Q952	8-729-230-49	TRANSISTOR 2SC2712-YG	R506	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
Q957	8-729-230-49	TRANSISTOR 2SC2712-YG	R507	1-216-077-00	METAL CHIP	15K 5% 1/10W
Q991	8-729-216-21	TRANSISTOR 2SA1162Y-TE85L	R510	1-216-049-00	METAL CHIP	1K 5% 1/10W
R001	1-216-035-00	METAL CHIP	R511	1-216-049-00	METAL CHIP	1K 5% 1/10W
R002	1-216-035-00	METAL CHIP	R512	1-216-081-00	METAL CHIP	22K 5% 1/10W
R003	1-216-295-00	METAL CHIP	R513	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
R004	1-216-295-00	METAL CHIP	R515	1-216-052-00	METAL CHIP	1.3K 5% 1/10W
R005	1-216-295-00	METAL CHIP	R518	1-216-036-00	METAL CHIP	300 5% 1/10W
R008	1-216-295-00	METAL CHIP	R527	1-216-071-00	METAL CHIP	8.2K 5% 1/10W
R021	1-216-295-00	METAL CHIP	R532	1-216-055-00	METAL CHIP	1.8K 5% 1/10W
R022	1-216-049-00	METAL CHIP	R533	1-216-057-00	METAL CHIP	2.2K 5% 1/10W
R023	1-216-655-11	METAL CHIP	R535	1-216-073-00	METAL CHIP	10K 5% 1/10W
R024	1-216-049-00	METAL CHIP	R536	1-216-073-00	METAL CHIP	10K 5% 1/10W
R025	1-216-059-00	METAL CHIP	R538	1-216-095-00	METAL CHIP	82K 5% 1/10W
R026	1-216-057-00	METAL CHIP	R539	1-216-049-00	METAL CHIP	1K 5% 1/10W
R027	1-216-073-00	METAL CHIP	R555	1-216-121-91	METAL GLAZE	1M 5% 1/10W
R028	1-216-057-00	METAL CHIP	R558	1-216-041-00	METAL CHIP	470 5% 1/10W
R029	1-216-075-00	METAL CHIP	R559	1-216-053-00	METAL CHIP	1.5K 5% 1/10W
R030	1-216-081-00	METAL CHIP	R560	1-216-041-00	METAL CHIP	470 5% 1/10W
R031	1-216-081-00	METAL CHIP	R568	1-216-089-91	METAL GLAZE	47K 5% 1/10W
R032	1-216-075-00	METAL CHIP	R581	1-216-069-00	METAL CHIP	6.8K 5% 1/10W
R033	1-216-081-00	METAL CHIP	R582	1-216-076-00	METAL CHIP	13K 5% 1/10W
R041	1-216-057-00	METAL CHIP	R591	1-216-041-00	METAL CHIP	470 5% 1/10W
R048	1-216-295-00	METAL CHIP	R601	1-216-295-00	METAL CHIP	0 5% 1/10W
R051	1-216-067-00	METAL CHIP	R604	1-216-295-00	METAL CHIP	0 5% 1/10W
R052	1-216-051-00	METAL CHIP	R606	1-216-295-00	METAL CHIP	0 5% 1/10W
R053	1-216-073-00	METAL CHIP	R610	1-216-067-00	METAL CHIP	5.6K 5% 1/10W
R054	1-216-681-11	METAL CHIP				

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
R611	1-216-069-00	METAL CHIP	5%	Δ CP401	1-468-034-21	POWER BLOCK(SR665) *****	
R613	1-216-085-00	METAL CHIP	5%			< CAPACITOR >	
R614	1-216-081-00	METAL CHIP	5%				
R615	1-216-049-00	METAL CHIP	5%				
R620	1-216-295-00	METAL CHIP	0				
R901	1-216-057-00	METAL CHIP	2.2K	C202	1-111-044-11	ELECT	2200uF 16V
R905	1-216-091-00	METAL CHIP	56K	C203	1-111-019-11	ELECT	2200uF 10V
R911	1-216-653-11	METAL CHIP	1.2K	C204	1-111-019-11	ELECT	2200uF 10V
R913	1-208-772-11	METAL GLAZE	390	C207	1-111-035-11	ELECT	330uF 16V
R920	1-216-295-00	METAL CHIP	0			< DIODE >	
R921	1-216-055-00	METAL CHIP	1.8K	D101	8-719-054-32	DIODE ERA15-06	
R922	1-216-067-00	METAL CHIP	5.6K	D102	8-719-030-24	DIODE EG01C	
R923	1-216-081-00	METAL CHIP	22K	D103	8-719-920-32	DIODE ERA15-02	
R924	1-216-081-00	METAL CHIP	22K	D105	8-719-038-80	DIODE RD3.0ES	
R925	1-216-045-00	METAL CHIP	680	D106	8-719-038-80	DIODE RD3.0ES	
R926	1-216-051-00	METAL CHIP	1.2K	D202	8-719-050-64	DIODE SF5LC20U	
R927	1-216-049-00	METAL CHIP	1K	D203	8-719-062-28	DIODE SF10SC4	
R928	1-216-667-11	METAL CHIP	4.7K	D204	8-719-059-45	DIODE AU02Z	
R929	1-216-295-00	METAL CHIP	0	D205	8-719-160-62	DIODE RD15FB	
R930	1-216-295-00	METAL CHIP	0			< IC >	
R935	1-216-049-00	METAL CHIP	1K	IC201	8-759-064-03	IC AN1431	
R936	1-216-049-00	METAL CHIP	1K			< TRANSISTOR >	
R945	1-216-067-00	METAL CHIP	5.6K				
R946	1-216-075-00	METAL CHIP	12K				
R949	1-216-031-00	METAL CHIP	180				
R951	1-216-065-00	METAL CHIP	4.7K	Q102	8-729-281-53	TRANSISTOR 2SC1815GR	
R952	1-216-045-00	METAL CHIP	680	Q103	8-729-012-30	TRANSISTOR 2SC4040	
R953	1-216-069-00	METAL CHIP	6.8K	Q104	8-729-012-30	TRANSISTOR 2SC4040	
R954	1-216-065-00	METAL CHIP	4.7K			< RESISTOR >	
R955	1-216-037-00	METAL CHIP	330				
R956	1-216-033-00	METAL CHIP	220	R113	1-247-827-11	CARBON	680 5% 1/4W
R962	1-216-075-00	METAL CHIP	12K	R114	1-247-828-11	CARBON	750 5% 1/4W
R963	1-216-077-00	METAL CHIP	15K	R203	1-247-835-11	CARBON	1.5K 5% 1/4W
R967	1-216-057-00	METAL CHIP	2.2K				
R968	1-216-295-00	METAL CHIP	0				
R973	1-216-041-00	METAL CHIP	470				
R980	1-216-081-00	METAL CHIP	22K				
R981	1-216-107-00	METAL CHIP	270K				
R983	1-216-295-00	METAL CHIP	0				
R984	1-216-295-00	METAL CHIP	0				
R985	1-216-045-00	METAL CHIP	680				
R986	1-216-075-00	METAL CHIP	12K				
R988	1-216-069-00	METAL CHIP	6.8K				
R989	1-216-295-00	METAL CHIP	0				
R990	1-216-071-00	METAL CHIP	8.2K				
R991	1-216-045-00	METAL CHIP	680				
R992	1-216-029-00	METAL CHIP	150				
R996	1-216-295-00	METAL CHIP	0				
R997	1-216-077-00	METAL CHIP	15K				
R998	1-216-295-00	METAL CHIP	0				

< VIBRATOR >

X502 1-579-608-11 VIBRATOR, CRYSTAL 4.433619MHZ

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
		MISCELLANEOUS *****	
16	1-777-675-11	CABLE, FLAT (FuF-19) 5P	
17	1-777-671-11	CABLE, FLAT (FuF-17)	
18	1-762-844-21	SWITCH, ROTARY	
53	1-777-669-11	CABLE, FLAT (FMR-5)	
54	1-777-668-11	CABLE, FLAT (FMR-4)	
59	1-777-674-11	CABLE, FLAT (FMC-9) 15P	
60	1-777-673-11	CABLE, FLAT (FMC-8) 23P	
61	1-764-137-11	CONNECTOR, TRANSLATION 15P	
62	1-777-667-11	CABLE, FLAT (FMD-10)	
103	1-777-340-11	CABLE, FLAT (FMD-11) 19P	
105	1-777-848-11	CABLE, FLAT (FMM-20)	
158	1-500-144-11	HEAD, FE	
203	8-848-622-02	UPPER DRUM ASSY DZR-66-R	
221	8-848-666-11	LOWER DRUM ASSY DZL-51B/J-RP(M901)	
260	1-762-076-11	SWITCH, ROTARY	
518	1-692-498-11	SWITCH, ROTARY	
M902	1-698-409-14	MOTOR, DC(CAPSTAN)	
M903	X-3943-883-1	MOTOR ASSY, CAM	
M904	A-7048-853-A	DRUM ASSY DGH-0D8A-R	
M905	8-835-499-01	MOTOR, DC SCE-0501A(CAPSTAN)	
M906	X-3942-946-1	MOTOR ASSY, CAM	

Note : The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

6-1. Video 8 SYSTEM

6-1-1. Interface between Video 8 system control and video, audio block (MH-18 board IC002)

Signal name	Pin No.	I/O	VTR mode													
			REC PAUSE	REVERSE	REC	PB. SLOW	SLOW	PICTURE SEARCH		(H) CUE	(H) REVIEW	PAUSE	SLOW	REVERSE	REC	
SP/LP	IC002 ②	O	*1	H	H	*1	*2	*2			*1	H	H	L	H/L	
VA PB MODE	IC002 ③	O	L	L	L	L	L	H	H		H	H	H	L	L	
JOG VD *3	IC002 ②	O	L	L	L	L	L	L	L		L	L	L	L	L	
RP PB MODE	IC002 ③	O	L	L	L	L	L	L	L		L	L	L	L	L	
FE ON	IC002 ④	O	H	H	H	H	H	H	H		H	H	H	L	H	
RF SWP	IC002 ⑤	O	L	*4	*4	*4	*4	*4	*4		*4	*4	*4	*4	H	
JOG	IC002 ④	O	L	L	L	L	L	H	H		H	H	H	L	L	
PB SP DET	IC002 ③	I	L	*5	*5	*5	*5	L	*5		*5	*5	—	—	H	
CLOG DET	IC002 ⑦	I	H	*6	*6	*6	*6	*6	*6		*6	*6	*6	H	*6	
V SYNC	IC002 ⑥	I	*7	*7	*7	*7	*7	*7	*7		*7	*7	*7	L	*7	
AUDIO PB	IC002 ⑧	O	L	L	L	L	L	H	*8		*8	H	H	L	L	
AUDIO MUTE	IC002 ⑨	O	L	L	L	L	L	H	H		H	H	H	L	L	
VIDEO CS	IC002 ⑩	O														
C SO2	IC002 ⑪	O														
SCK2	IC002 ⑫	O														

*1. Outputs the identification result of the immediately previous mode.

*2. Outputs the identification result of the recording mode of a playback tape.

*3. SP mode at H and LP mode at L.

*4. Pseudo VD signal.

*5. The SP recorded segment of a tape: H, LP recorded segment: L.

*6. Non-recorded segment or dropout portion of a tape: H.

*7. LINE IN video signal, or the composite sync signal input which is separated from the playback video signal (Positive + polarity).

*8. Ring shuttle mode from REC PAUSE: L. Other modes: H.

*9. Recording time (SP), SP mode: H.

SECTION 6
INTERFACE, IC PIN FUNCTION DESCRIPTION

6-2. VHS SYSTEM

6-2-1. Interface between VHS system control and video block (MV-34 board IC201)

[illegible]

*1. 25 Hz pulse with 50 % duty cycle. Synchronized with rotation of

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*2. Normally "L." "H" when CTL signal is not played back.

*3. "H" pulse of vertical rate.

*4. Selected by the recording time (SP/LP). "L" during SP mode.

*5. Selected by the tape recording mode.

LP ⑫	L	H
SP ⑬	L	H
Signal	SP	LP

6-1-2. Interface between Video 8 servo control and servo block (MH-18 board IC002)

Signal name	Pin No.	I/O	STOP	FF	REW	× 2 × 4	× 2 × 2	PB	VTR mode				REC				
									PICTURE SEARCH		(HI) CUE	(HI) REVIEW		PB ·	SLOW	REVERSE	REC
									PAUSE	SLOW							
T.REEL FG	IC02 ⑤	1	—	*1	*1	*1	*1	*1	*1	—	*1	*1	—				
S.REEL FG	IC02 ⑥	1	—	*1	*1	*1	*1	*1	*1	—	*1	*1	—				
ATE ERROR	IC02 ⑤	1	—	*2	*2	*2	*2	*2	*2	—	*2	*2	—				
DRUM FG	IC02 ⑥	1	—	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3				
DRUM FG	IC02 ⑤	1	—	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4				
CAP FG/HMS CAP FG	IC02 ②⑦	1	—	*5	*5	*5	*5	*5	*5	—	*5	*5	*5	—			
CAP ON	IC02 ⑤	0	L	H	H	H	H	H	H	L	*8	*6	*6				
REF PILOT	IC02 ⑤	0	L	H	H	H	H	H	H	L	*8	*6	*6				
DRUM RVS #11	IC02 ⑦	0	L	L	L	L	L	L	L	L	L	L	L				
CAP PWD	IC02 ⑤	0	L	H	H	H	H	H	H	L	*8	*9	H				
DRUM P.WM	IC02 ⑦	0	L	H	H	H	H	H	H	L	*10	*10	*10				
CAP PWM	IC02 ⑦	0	L	H	H	H	H	H	H	L	*10	*10	*10				

*1. The pulse is input whose cycle corresponds to the reel rotation.

*2. ATF error voltage input.

*3. Approx. 25 Hz.

*4. Approx. 300 Hz.

*5. Approx. 560 Hz during REC/PB (SP).

*6. The four frequencies which are synchronized with drum rotation are 101.02 kHz, 12 = 117.18 kHz, 13 = 162.76 kHz, 14 = 146.48 kHz.

$$= 1.9$$

*7. $f_1 = 101.02 \text{ kHz}$ and $f_3 = 162.76 \text{ kHz}$ are output.

*8. "H" pulse during tape is advanced.

*9. "L" pulse during tape is advanced.

*10. PWM signal.

*11. Normally "L". Temporally "H" only during transition of FF $\rightarrow$ PB, FF $\rightarrow$

STOP, FF $\rightarrow$ CUE. (Drum rotation is reversed.)

6-2-2. Interface between VHS system control and servo peripheral circuit (MV-34 board IC201)

Signal name	Pin No.	I/O	STOP	FF	REW	TAPE THREAD- ING	TAPE THREAD- ING	PB	PB- PAUSE	× 2	CUE	REVIEW	REC	REC- PAUSE	PB INDEX WRT/ERS
REC CTL	IC201 ⑦	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	
CAP STOP	IC201 ⑧	O (O.D.)	L	HI-Z (O.D.)	HI-Z (O.D.)	HI-Z (O.D.)	HI-Z (O.D.)	L	*3	HI-Z (O.D.)	HI-Z (O.D.)	HI-Z (O.D.)	HI-Z (O.D.)		
STEP PLS	IC201 ⑨	O	L	L	L	L	L	L	*2	L	L	L	L		
CTL REC	IC201 ⑩	O	L	L	L	L	L	L	L	L	L	L	L	H	
CTL INDEX	IC201 ⑪	O	L	L	L	L	L	L	L	L	L	L	L	H	
PB CTL	IC201 ⑫	I	H	*6	*6		*1	H/L	*2	*6	*6	*1	H		
DRUM PG	IC201 ⑬	I	*4	*7	*5	*5	*7	*8	*7	*7	*7	*7	*7		
DRUM FG	IC201 ⑭	I	*4	*8	*5	*8	*8	*8	*8	*8	*8	*8	*8		
CAP FG	IC201 ⑮	I	H/L	*6	*5	*6	H/L	*9	*6	*6	*6	H/L	*10		
CAP DA	IC201 ⑯	O	*10	*10	*10	*10	*11	*10	*12	*12	*11	*12	*12		
DRUM DA	IC201 ⑰	O	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12		
CTL STEP	IC201 ⑱	O	L	L	L	L	L	L	L	L	L	L	L		

- *1. 25 Hz pulse.
 *2. Pulse which occurs while tape is running.
 *3. Inverted logic pulse of stop pulse.
 *4. "L" while drum is stopped.
 *5. Random pulse.
 *6. The pulse whose cycle is proportional to tape speed.
 *7. 25 Hz pulse.

- *8. 300 Hz pulse.
 *9. Pulse which occurs while tape is running.
 *10. "H" or "L" pulse of about 2 ms rate.
 *11. "H" or "L" pulse of about 1.5 ms rate.
 *12. "H" or "L" pulse of about 3 ms rate.
 *13. "H" during forward direction and during step drive.

6-2-3. Interface between system control and mechanism block (MV-34 board IC201)

Signal name	Pin No.	I/O	EJECTED	LOADING	CASSETTE UNLOADING	TAPE THREAD- ING	TAPE THREAD- ING	STOP	FF	REW	PB	PB- PAUSE	× 2	CUE	REVIEW	REC	REC- PAUSE
CAM LOAD	IC 201 ③	O	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L
CAM UNLOAD	IC 201 ④	O	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L
CAM 12V	IC 201 ⑤	O		H	H	L	L										
MODE 1	IC 201 ⑥	I	H	L	L	L	L	H	H	H	H	H	H	H	H	H	H
MODE 2	IC 201 ⑦	I	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MODE 3	IC 201 ⑧	I	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MODE 4	IC 201 ⑨	I	L	H	H	Not fixed	Not fixed	H	H	H	H	L	L	L	L	L	L
C IN/REC PRF	IC 201 ⑩	I	L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L
T REEL FG	IC 201 ⑪	I	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L
S REEL FG	IC 201 ⑫	I	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L	H/L
T/E LED	IC 201 ⑬	O (O.D.)	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
CAP TRQ 1	IC 201 ⑭	O (O.D.)										Not fixed					
CAP TRQ 2	IC 201 ⑮	O (O.D.)										L					
CAP TRQ 3	IC 201 ⑯	O (O.D.)										Not fixed					
CAP STOP	IC 201 ⑰	O (O.D.)	L	L	H	H	L	H	H	H	L	L	L	H	H	H	L
CAP RVS	IC 201 ⑱	O	H		L	H	H/L	L	H	H	L	L	L	L	H	H	L
CAP DA	IC 201 ⑲	O															
T SENS	IC 201 ⑳	I	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
S SENS	IC 201 ㉑	I	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4

- *1. "L" when a cassette record enable table is broken. "H" when it is not broke.
 *2. The pulse whose cycle corresponds to the reel rotation.
 *3. "H" pulse of about 2 ms rate.
 *4. Pulse which occurs while tape is running.
 *5. Normally "L". "H" pulse of about 2 ms rate when tape top of tape end is detected.

6-2-4. Interface between VHS system control and system control peripheral circuit (MV-34 board IC201)

Signal name	Pin No.	I/O	Input/output level
ASURA RESET	IC201 ④	I	Normally "H". Goes to "L" when power failure is detected or when returned from power failure.
ASURA CS	IC201 ⑤	I	Chip select signal from the tuner/mode control microprocessor (FR-113 board, IC001). "L" pulse of vertical rate.
SI (SO BUS)	IC201 ⑥	I	Serial communication data from the tuner/mode control microprocessor (FR-113 board, IC001). "L" pulse of vertical rate.
SO (SI BUS)	IC201 ⑦	O	Serial communication data to the tuner/mode control microprocessor (FR-113 board, IC001). "L" pulse of vertical rate.
S CLK	IC201 ⑧	I	Serial communication clock from the tuner/mode control microprocessor (FR-113 board, IC001). "L" pulse of vertical rate.

6-2-5. Interface between VHS system control and audio block (MV-34 board IC201)

Signal name	Pin No.	I/O	STOP FF/ REW	TAPE LOADING	TAPE UNLOADING	PB	PB PAUSE	SLOW	× 2	CUE	REVIEW	REC	REC PAUSE
AF ENVELOP	IC201 ⑨		AF RF envelope signal input pin for auto tracking.										
REC	IC201 ⑩	O	L	L	L	L	L	L	L	L	L	H	L
A MUTE	IC201 ⑪	O (O.D.)	L	L	L	H	H	H	H	H	H	L	L
SP	IC201 ⑫	O	*2	*2	*2	*3	*3	*3	*3	*2	*2	*2	*2
NA REC · P	IC201 ⑬	O	L	L	L	L	L	L	L	L	L	H	L
AF REC · P	IC201 ⑭	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	IC201 ⑮	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1

*1. 25 Hz pulse with 50 % duty cycle. Delayed about 5 ms after the RF switching pulse.
 *2. Depending upon the recording mode selection. "L" during SP mode.
 *3. Depending upon the recording mode of a tape. "L" during SP mode.

6-2-6. VHS servo/system control microprocessor (MV-34 board IC201)

Pin.No.	Signal name	I/O	Function
1	RF SWP	O	RF switching pulse
2	QVD	O	Quasi VD
3	QHD ENBL	O	Quasi HD voltage level control
4	AF REC P	O	HiFi recording control
5	NTSC	O	Not used
6	FE ON	O	Flying erase control
7	REC CTL	O	REC CTL
8	CAP TRQ3	I/O	Capstan torque control 3
9	APC1	O	APC
10	APC1	O	APC
11	NA REC P	I/O	Normal audio REC P
12	LP	O	LP/SP
13	CAM LOAD	O	Cam motor loading drive
14	CAM UNLOAD	O	Cam motor unloading drive
15	C IN(REC PROOF)	I	"Mis-erasing protection lab, cassette in detection signal input"
16	YNR	I	YNR control signal
17	REC P	I	R/P recording signal
18	NC	I	Not used
19	NC	O	Oscillator for chroma processing system frequency select 3.58/4.43
20	NT JUDGE	I	3.58/4.43 NTSC discriminating signal input
21	BLUE BACK ON	O	Force blue back
22	NTSC PB(HEAD CONT)	O	NTSC PB on PAL-TV signal
23	TV/TR	O	Not used
24	SECAM	O	Not used
25	MESSECAM	O	Not used
26	NC	O	Not used
27	MODE4	I	Cam encoder data 4
28	MODE3	I	Cam encoder data 3
29	MODE2	I	Cam encoder data 2
30	MODE1	I	Cam encoder data 1
31	CAM 12V	O	Cam motor 12V drive
32	T/E LED	O	Top/End sensor light up control
33	CAP TRQ2	O	Capstan torque control 2
34	CAP TRQ1	O	Capstan torque control 1
35	CAP STOP	O	Capstan stop control
36	FULL ERS	O	Full erase head control
37	NC	O	Not used
38	NC	O	Not used
39	MP(GND)	I	"Fixed to L....."
40	ASURA RESET	I	System reset signal
41	VSS	—	Ground
42	XTAL	—	System clock 16MHz
43	EXTAL	—	System clock 16MHz
44	ASURA CS	I	Servo/system control microprocessor chip select signal
45	S IN	O	Serial communication signal
46	S OUT	O	Serial communication signal
47	SCLK	O	Serial communication signal
48	AC ONLINE	—	Not used
49	NC	—	Not used
50	EDIT	O	EdIt

Pin.No.	Signal name	I/O	Function
51	L1NE3	—	Not used
52	AVSS	—	Unswitched ground
53	AVREF	—	AD port reference input UNSW 5V
54	AVDD	I	UNSW 5V
55	APC ERROR	—	APC error feedback
56	DEW	—	Not used
57	NC	I	Not used
58	VA ADJ	I	Switching position test mode
59	AF ENV	I	AF envelope level input
60	RF ENV	I	RF envelope level input
61	T SENS	I	Tape top sensor input
62	S SENS	I	Tape end sensor input
63	S REEL FG	I	Supply reel FG input
64	T REEL FG	I	Take-up reel FG input
65	NC	I	Not used
66	V SYNC	I	V sync signal input
67	PB CTL	I	CTL input
68	DRM FG	I	Drum FG input
69	DRM FG	I	Drum FG input
70	CAP FG	—	Capstan FG input
71	POWER SAVE CONT	O	Not used
72	CAP RVS	O	Capstan RVS/FWD control
73	CAP DA	O	Capstan rotation control D/A output
74	DRM DA	O	Drum rotation control D/A output
75	CTL REC	O	CTL amp recording inhibition
76	CTL STEP	I	CTL amp stop control
77	NC	I	Not used
78	NC	O	Not used
79	CTL INDEX	O	CTL amp index control
80	SO1	O	SSB serial data output
81	SCK1	O	SSB serial clock output
82	LINE 2	O	Not used
83	LINE 1	O	Not used
84	APC PWM	O	APC PWM output
85	NC	—	Not used
86	NC	—	—
87	NC	—	Not used
88	VSS	—	Ground
89	VDD	—	5V
90	NC	—	5V
91	QRC SETEI	O	"EE/R/E/C/PB: 0, Output setting: 1"
92	A MUTE	O	HiFi audio mute
93	SP	O	SP
94	NC	O	Not used
95	NC	O	Not used
96	REC	O	HiFi rec control
97	Jog	O	Variable speed playback: H (for video)
98	VPB	O	Video playback output control
99	STEP PLS	O	Capstan pulse drive control output
100	AF SWP	O	HiFi switching pulse

6-2-7. VHS mode control microprocessor (MV-34 board IC801)

Pin.No.	Signal name	I/O	Function
1	VPS SEL R/V	O	Selection of video signal to VPS/PDC IC either R or V.
2	AUTO PRESET	O	H during auto reset.
3	OSD COLOR CONT	O	OSD chroma through control during SECAM.
4	MOD CONT	O	VTR or TV selection of RF modulator.
5	N.C.	O	Not used.
6	N.C.	O	Not used.
7	POWER CONT	O	Power ON/OFF control.
8	CLK ADJ	I	H during clock adjustment for watch mode.
9	C+ ON/OFF	O	ON/OFF control of CANAL+ circuit power supply.
10	C+ DET	I	CANAL+ signal detection input.
11	HIT RESET	O	HIT microprocessor reset output.
12	RESET ENABLE	I	Resettable during L.
13	POWER FAIL REQ	O	Reset request output to HIT microprocessor.
14	POWER FAIL	I	Power failure detection signal input.
15	N.C.	I	Not used.
16	N.C.	I	Not used.
17	N.C.	I	Not used.
18	N.C.	I	Not used.
19	N.C.	I	Not used.
20	N.C.	I	Not used.
21	N.C.	I	Not used.
22	N.C.	I	Not used.
23	POWER SAVE CONT	O	DC - DC converter control during POWER SAVE.
24	N.C.	O	Not used.
25	N.C.	O	Not used.
26	N.C.	O	Not used.
27	QM DET	O	Macro-vision detected output.
28	N DET	O	Macro-vision detected output.
29	MV DET2	O	Macro-vision detected output.
30	MV DET1	O	Macro-vision detected output.
31	N.C.	O	Not used.
32	VHS EE S/V	O	VHS video/S-video selection output.
33	N.C.	O	Not used.
34	N.C.	O	Not used.
35	SDA	O	Data output for I2C control.
36	SCL	O	Clock output for I2C control.
37	N.C.	O	Not used.
38	OSD CS	O	OSD IC chip select signal output.
39	MP	I	Fixed to L.
40	RESET	I	Reset input.
41	Vss		GND.
42	XTAL		System clock 16 MHz.
43	EXTAL		System clock 16 MHz.
44	WT CS	I	Chip select signal input.
45	SI	I	Serial communication data input.
46	SO	O	Serial communication data output.
47	SCLK	I	Serial communication clock input.
48	N.C.	O	Not used.
49	N.C.	O	Not used.
50	N.C.	O	Not used.

Pin.No.	Signal name	I/O	Function
51	N.C.	O	Not used.
52	AVss		GND.
53	AVref		Power supply 5 V.
54	AVdd		Power supply 5 V.
55	N.C.	I	Not used.
56	N.C.	I	Not used.
57	N.C.	I	Not used.
58	N.C.	I	Not used.
59	N.C.	I	Not used.
60	N.C.	I	Not used.
61	N.C.	I	Not used.
62	N.C.	I	Not used.
63	N.C.	I	Not used.
64	VHS H DET	I	VHS video signal detection input signal.
65	SECAM	I	SECAM identification signal input.
66	COMP SYNC	I	Composite sync input.
67	S2 SW	I	S-video connection to input-2 detection input signal.
68	DAV	I	VPS/PDC data validity signal input.
69	H DET	I	Video signal detection input signal.
70	ACK VHS	I	VHS ACK signal input.
71	POWER MUTE	O	Audio mute signal.
72	N.C.	O	Not used.
73	N.C.	O	Not used.
74	ACK OUT	O	ACK signal output.
75	N.C.	O	Not used.
76	N.C.	O	Not used.
77	CMP SYNC	I	Composite sync input.
78	N.C.	I	Not used.
79	N.C.	I	Not used.
80	CG SO	O	OSD IC serial data.
81	CG SCLK	O	OSD IC serial clock.
82	N.C.	O	Not used.
83	CLK OUT	O	Clock output for watch adjustment.
84	SDA IN	I	Data input for I2C control.
85	SCL IN	I	Clock input for I2C control.
86	TEX		Sub clock 32 kHz.
87	TX		Sub clock 32 kHz.
88	Vss		GND.
89	Vdd		Power supply 5 V.
90	Vdd		Power supply 5 V.
91	I CONT	O	CANAL+ I-signal control.
92	EURO AV CONT	O	AV CONT signal of EURO AV.
93	N.C.	O	Not used.
94	N.C.	O	Not used.
95	AV OUT SEL	O	AV output C+ decoder direct/EB selection output.
96	AV V/S	O	EURO AV video/S-video selection output.
97	N.C.	O	Not used.
98	C+ SEL	O	CANAL+ decoder input TV/VTR selection.
99	LINE2 V/S	O	LINE 2 video/S-video selection output.
100	LINE3 V/S	O	LINE 3 video/S-video selection output.

6-2-8. Mode control microprocessor (FR-113 board IC001)

Pin.No.	Signal name	I/O	Function
1	32K X ¹ tal		Pin to which an external sub oscillator is connected.
2	32K X ² tal		Pin to which an external sub oscillator is connected.
3	MOD0	I	GND.
4	MOD1	I	GND.
5	X ¹ tal		Pin to which an external main oscillator is connected.
6	X ² tal		Pin to which an external main oscillator is connected.
7	Vss		GND.
8	RESET	I	Reset signal input (from WT).
9	N.C.	O	Not used.
10	N.C.	O	Not used.
11	N.C.	O	Not used.
12	N.C.	O	Not used.
13	N.C.	O	Not used.
14	N.C.	O	Not used.
15	N.C.	O	Not used.
16	N.C.	O	Not used.
17	POWER FAIL REQ	I	Power failure processing request signal input (from WT).
18	CG V SYNC	I	V _{sync} signal input.
19	RESET ENABLE	O	Power failure processing completion signal output (to WT).
20	VHS SYS CS	O	VHS system control microprocessor chip select signal output.
21	DMS1	I	Rotation pulse input-1 of CLICK SHUTTLE.
22	DMS2	I	Rotation pulse input-2 of CLICK SHUTTLE.
23	SCL	I/O	I2C bus (clock).
24	SDA	I/O	I2C bus (data).
25	8mm SYS CS	O	8 mm system control microprocessor chip select signal output.
26	SYS RESET	O	System control microprocessor reset output.
27	WT CS	O	WT microprocessor chip select signal output.
28	CMOD		5 V.
29	TA MUTE1	O	Tuner-1 audio mute output.
30	LED CS	O	Strobe signal for LED driver.
31	N.C.	O	Not used.
32	SIRCS IN	I	Remote control signal input.
33	PLL CLK1	O	Tuner-1 clock signal.
34	PLL DATA1	O	Tuner-1 data signal.
35	PLL ENABLE1	O	Tuner-1 enable signal.
36	TU V DET1	I	Tuner-1 video signal detection signal input.
37	BCL	O	Tuner system selection-1 for B destination.
38	L/L	O	Tuner system selection-2 for B destination.
39	SEG1	O	VFP segment 1.
40	SEG2	O	VFP segment 2.
41	SEG3	O	VFP segment 3.
42	SEG4	O	VFP segment 4.
43	SEG5	O	VFP segment 5.
44	SEG6	O	VFP segment 6.
45	SEG14	O	VFP segment 14.
46	SEG15	O	VFP segment 15.
47	SEG16	O	VFP segment 16.
48	SEG7	O	VFP segment 7.
49	Vcc		Power input pin (4.5 V to 5.5 V).
50	SEG8	O	VFP segment 8.

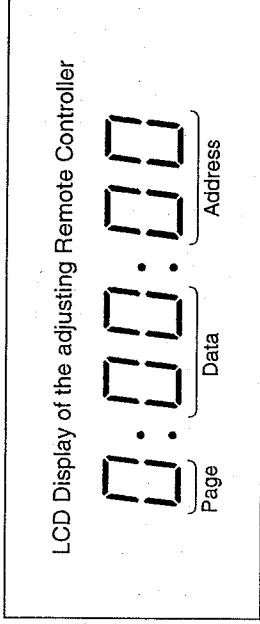
Pin.No.	Signal name	I/O	Function
51	SEG9	O	VFP segment 9.
52	SEG10	O	VFP segment 10.
53	Vldp		High withstand voltage pull-down power supply terminal.
54	SEG11	O	VFP segment 11.
55	SEG12	O	VFP segment 12.
56	SEG13	O	VFP segment 13.
57	SEG17	O	VFP segment 17.
58	Vss		GND.
59	SEG18	O	VFP segment 18.
60	SEG19	O	VFP segment 19.
61	SEG20	O	VFP segment 20.
62	SEG21	O	VFP segment 21.
63	SEG22	O	VFP segment 22.
64	SEG23	O	VFP segment 23.
65	SEG24	O	VFP segment 24.
66	GRID8	O	VFP grid 8.
67	Vcc		Power input pin (4.5 V to 5.5 V).
68	GRID7	O	VFP grid 7.
69	GRID6	O	VFP grid 6.
70	GRID5	O	VFP grid 5.
71	GRID4	O	VFP grid 4.
72	GRID3	O	VFP grid 3.
73	GRID2	O	VFP grid 2.
74	GRID1	O	VFP grid 1.
75	N.C.	O	Not used.
76	N.C.	O	Not used.
77	SI BUS	I	Serial data input.
78	SO BUS	O	Serial data output.
79	SCLK	O	Serial data clock.
80	MEM CS	O	EEPROM chip select signal output.
81	MEM CLK	O	EEPROM clock.
82	MEM DATA	I/O	EEPROM data.
83	AVss		Analog GND.
84	AFT1	I	Tuner-1 AFT input.
85	N.C.	O	Not used.
86	A/D2	I	Key data read A/D 2 input.
87	A/D3	I	Key data read A/D 3 input.
88	A/D4	I	Key data read A/D 4 input.
89	A/D5	I	Key data read A/D 5 input.
90	A/D6	I	Key data read A/D 6 input.
91	A/D7	I	Key data read A/D 7 input.
92	AVcc	I	Analog power input pin (4.5 V to 5.5 V).
93	A/D8	I	Key data read A/D 8 input.
94	A/D9	I	Key data read A/D 9 input.
95	N.C.	O	Not used.
96	N.C.	O	Not used.
97	LANC IN	I	LANC input.
98	LANC OUT	O	LANC output.
99	BUZZER	O	Buzzer output.
100	Vcc		Power input pin (4.5 V to 5.5 V).

SECTION 7
ADJUSTMENTS

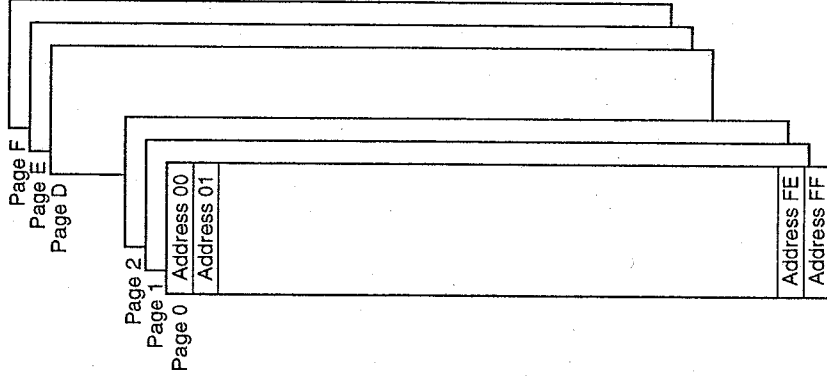
<SERVICE MODE>

1. SETTING THE SERVICE MODE

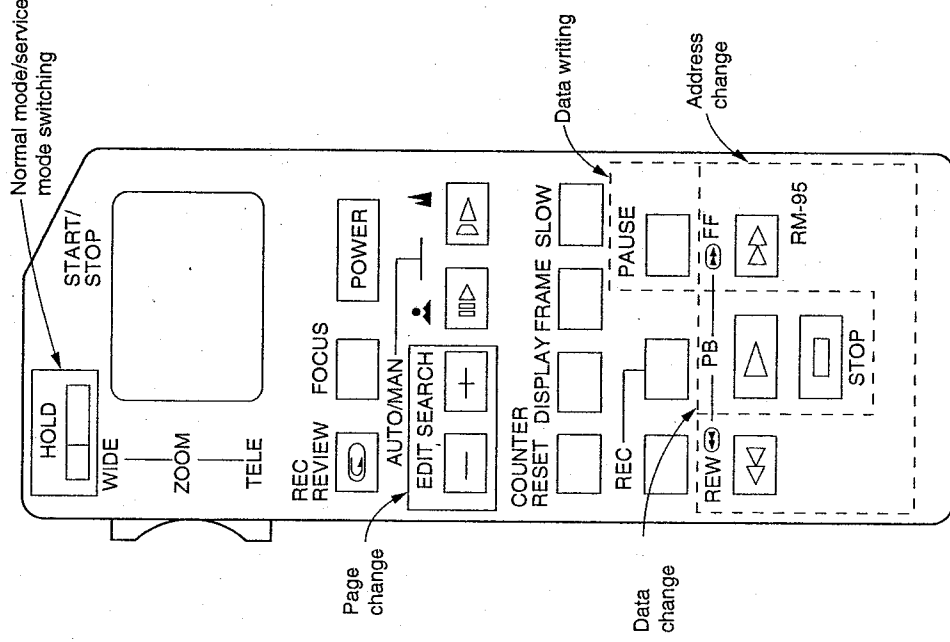
The service mode consists of the adjustment mode which adjusts the EVR and the test mode which shows the condition of the unit. The unit can be set into the test mode and adjustment mode by connecting the adjustment remote commander (Set the HOLD switch to "HOLD").



(1) Service LANC memory map



Adjustment remote commander RM-95 (J-6082-053-B)



Note 1: When data on this page is rewritten with adjustment remote control to set the adjustment mode or test mode, that data will not be written to EEPROM. Therefore, simply disconnect the main power to return to the original state (normal state).

Note 2: The data of this page is written in the EEPROM (IC002 of FR-113 board).

Page	Page Layout
0	
1	Shared by VTR section (Note 1)
2	Mode controller RAM, I/O (Note 1)
3	Mechanism controller RAM, I/O (Note 1)
4	
5	
6	F page write protect
7	
8	
9	
A	
B	T/T controller RAM, I/O (Note 1)
C	
D	VTR EEPROM (Note 2)
E	
F	

2. TEST MODE SETTING

(1) Servo/System Control Micom

1. Set page : 3, address : 00, data : 02.
2. The system goes to the test mode by setting data as following of page : 3, address : 01.

Note : Test mode is released by turning power off.

3. EMERGENCY CODES

These codes can be used to check the condition of failure (abnormality) that occurred.

Page D	Address EC	Address E0
--------	------------	------------

Video 8

VHS

First Emergency Code

... The code of the first failure that occurred.

Page D	Address E8	Address DC
--------	------------	------------

Second Emergency Code

... The code of the second failure that occurred.

Page D	Address E4	Address D8
--------	------------	------------

Last Emergency Code

... The code of the last failure that occurred (This data will be renewed each time a failure occurs).

Note 1 : After completing necessary adjustments/repairs, be sure to rewrite the data address EC, E8, E0, DC and D8 to 00.

Note 2 : When writing data, after setting the data, be sure to press the PAUSE button on the adjustment remote control.

Code	Condition of Failure
00	No failure
10	Load Direction, Cam Encoder Failure
11	Unload Direction, Cam Encoder Failure
20	Not used.
21	Not used.
22	T Reel Rotational Failure
23	S Reel Rotational Failure
24	FG Failure at Start of T Reel
25	FG Failure at Start of S Reel
26	Failure at Start of Capstan
31	Failure During Stationary Operation of Capstan
40	FG Failure at Start of Drum
41	PG Failure at Start of Drum
42	FG Failure During Stationary Operation of Drum
43	Not used
44	Not used
50	Not used
60	FL Cassette Compartment Failure
70	DEW EJECT Failure

4. D PAGE MEMORY MAP

Note : When replacing EEPROM on the MA board, set data on page D as follows.

Address	Function	Initial Value
00 - 07		00
08 - 10		00
11	Video 8 Adjustment Mode	10
12	Video 8 Switching Position Adjustment (LOW)	*1
13	Video 8 Switching Position Adjustment (HIGH)	*1
14	SP Mode FWD X2	00
15	SP Mode FWD Slow	00
16	Cap. Duty (LOW)	00 *1
17	Cap. Duty (HIGH)	20 *1
18 - 1F		
20	SP Slow Adjustment (Video 8)	80
21	LP Slow Adjustment (Video 8)	80
22	SP — Slow Adjustment (Video 80)	80
23	LP — Slow Adjustment (Video 8)	80
24	SP X 2 Adjustment (Video 8)	80
25	LP X2 Adjustment (Video 8)	80
26 - D7		
D8	Emergency Code (LAST)(VHS)	00
D9 - DB		00
DC	Emergency Code (2nd)(VHS)	00
DD - DF		00
E0	Emergency Code (1st)(VHS)	00
E1 - E3		00
E4	Emergency Code (LAST) (Video 8)	00
E5 - E7		00
E8	Emergency Code (2nd)(Video 8)	00
E9 - EB		00
EC	Emergency Code (1st)(Video 8)	00
ED - EF		00
F0 - FF	Factory Data	

*1 Center Value

7-1. MECHANICAL ADJUSTMENTS

1-1. VHS MECHANICAL ADJUSTMENTS

For Mechanical Adjustments

For the procedures how to adjust and check the mechanism, as well as how to replace mechanical parts. Refer to the separate VHS Video Mechanical Adjustment Manual (H MECHANISM)(9-973-623-11)

However, for the procedures how to set the Track Shift mode, refer to the following text.

1-2. Video 8 MECHANICAL ADJUSTMENTS

For Mechanical Adjustments

For the procedures how to check the mechanism, as well as how to replace mechanical parts, refer to the separate 8mm Video Mechanical Adjustment Manual V (FMECHANISM) (9-973-445-11).

However, for the procedures how to set the Track Shift mode, refer to the following text.

1-2-1. TAPE PATH ADJUSTMENT (TRACK SHIFT)

The 8mm Video Tape Recorder system uses the ATF (Automatic Track Finding) function in which four different pilot signals are used for controlling the tape speed instantaneously to provide high precision tracking. This eliminates the Tracking Adjustment control, thus allowing accurate tracing.

In spite of its advantageous feature, the ATF system may have a difficulty in adjusting the tape path system. The ATF will automatically corrects tracing even if impossible to perform a complete adjustment.

Therefore, when performing a fine adjustment for tracking, the Track Shift mode should be entered before starting this adjustment. This mode will force to operate the ATF to shift the amount of tracking by a given quantity (approximately 1/4), so that tracking can be easily fine adjusted. Furthermore, no track shift jig is needed.

1. Setting the Track Shift Mode

- 1) Place the adjustment remote control RM-95 (J-6082-053-B) in the HOLD ON position.
- 2) Category code setting
Page : 3, address : 00, data : 02.
- 3) Track shift playback
Page : 3, address : 01, data : 01.
(To change the quantity for track shift, data stored at category 02, address 08 should be changed.)

Note 1 : For details of the Test Mode, refer to "SECTION 7 SERVICE MODE."

Note 2 : If the LP mode is recognized by the system wrongly, operate the Recording Time SP/LP button to enter the SP mode.

Note 3 : After adjustment, operate the PB/STOP button to reset to adjustment data 00. Place the remote control in the HOLD OFF position to return to the normal mode.

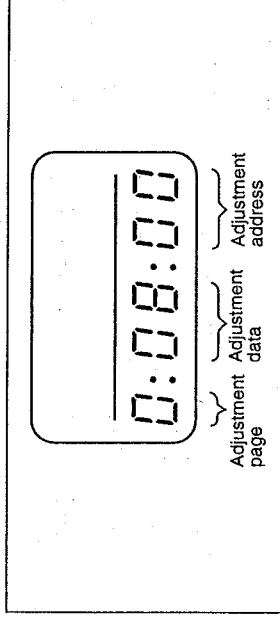


Fig. 7-1-1

2. Preparation before Adjustment

- 1) Clean the surfaces over which tape moves past (of the tape guides, drum, capstan shaft and pinch rollers).
- 2) Oscilloscope Connection and Waveform Output:
1 ch : Drum head's RF signal output, MH-18 board CN102 pin ③ (PB RF).
External trigger input : MH-18 board CN102 pin ② (RF SWP)
GND : MH-18 board CN102 pin ① (GND)
- 3) Playback alignment tape for tracking (WR5-1CP).
- 4) Check that RF waveform observed on the oscilloscope is flat on both entrance and exit sides.
If not flat, perform necessary adjustment according to the separate 8mm Video Mechanical Adjustment V (F MECHANISM).

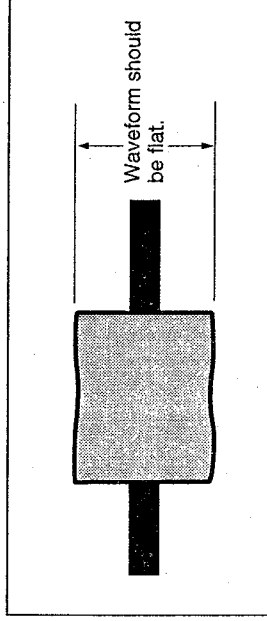


Fig. 7-1-2

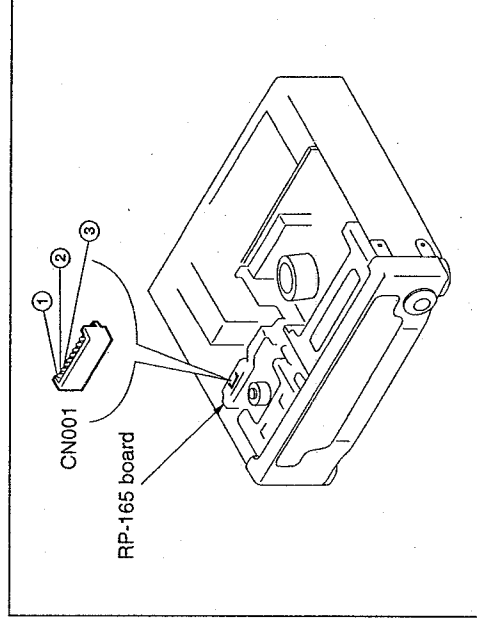


Fig. 7-1-3

7-2. ELECTRICAL ADJUSTMENT

See the adjusting parts location diagram from on page 7-30 for the adjustment.

For details of the SENSOR LANC, refer to page 7-1 (SERVICE MODE).

2-1. PREPARATION BEFORE ADJUSTMENT

2-1-1. Equipment Required

The measuring instruments used for this alignment include:

- 1) Monitor TV
- 2) Oscilloscope, dual-trace, bandwidth of 30MHz or more, with delay mode (A probe 10 : 1 should be used unless otherwise specified.)
- 3) Frequency counter
- 4) Pattern generator (with Video Output terminal; refer to Section 7-2-1-2. Equipment Connection.)
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion meter
- 9) Audio attenuator
- 10) Vector scope
- 11) Alignment tapes
 - ① For video 8
 - For tracking adjustment (WR5-1CP)
Parts No. : 8-967-995-07
 - For video frequency adjustment (WR5-7CE)
Parts No. : 8-967-995-18
 - For L mode operation check
For SP (WR5-5CSP)
Parts No. : 8-967-995-46
or (WR5-4CSP)
For LP (WR5-4CL)
Parts No. : 8-967-995-47
 - For E mode operation check (ME tape)
For SP (WR5-8CSE)
Parts No. : 8-967-995-56
For LP (WR5-8CLE)
Parts No. : 8-967-995-48
 - For AFM stereo operation check (WR5-9CS)
Parts No. : 8-967-955-57
 - ② For VHS
 - Alignment type (KRV-51P)
Parts No. : 8-192-605-36
- 12) Adjustment remote commander (J-6082-053-B)
 - LANC jig (LA-LA2)
Parts No. : J-6090-051-A
- 13) AFM DEV. jig
Parts No. : J-6082-312-A

2-1-2. Equipment Connection

According to the specification of the input terminal (S VIDEO or VIDEO), connect required measuring instruments as shown in Fig. 7-2-1 and perform adjustment. The input terminal is specified in the parentheses () in the signal column. Unless otherwise specified, either terminal takes precedence. When performing adjustment with the VIDEO input terminal, pull out the connector from the S VIDEO input terminal.

Note 1 : When S VIDEO input is specified for a specific adjustment, if the adjustment is performed with VIDEO input, the product specifications for this unit may not be satisfied. The specified input must be always used.

Note 2 : If an adjustment is performed by using a VTR with S VIDEO output terminal as a signal source, the performance of this unit will be affected by that VTR. A pattern generator with Y/C separation output terminal should be used wherever possible.

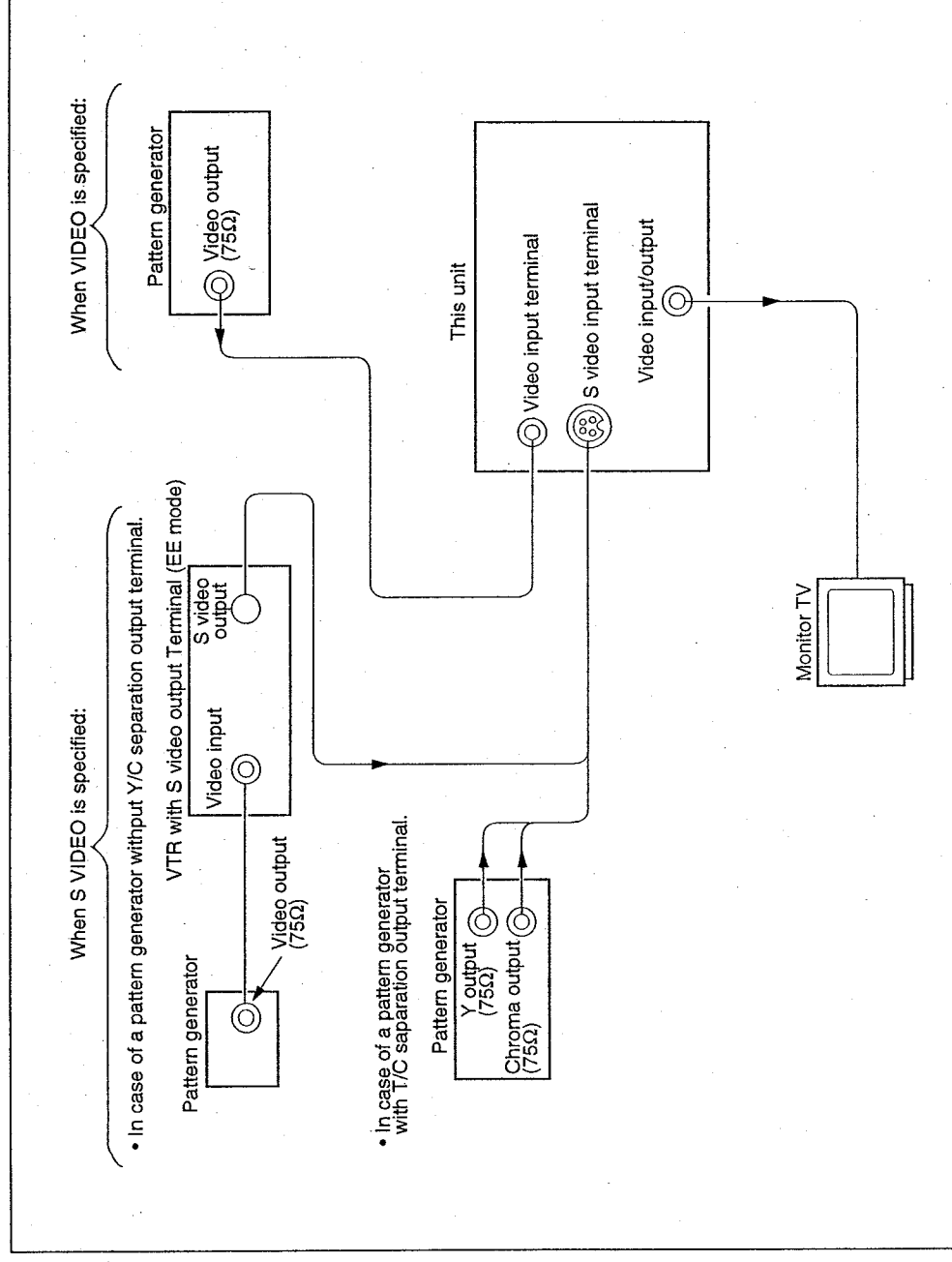


Fig. 7-2-1

2-1-3. Input Signal Check

Video signal produced by a pattern generator is used as an adjustment signal to perform electrical alignment for this unit. This video signal must satisfy the specification.

1) S VIDEO Input

Connect an oscilloscope to the Y Signal terminal of the S Video input terminal. Check that the synchronizing signal of the Y signal is approximately at 0.3Vp-p and that its video portion has an amplitude of approximately 0.7Vp-p. (When a VTR with S Video output terminal is used, in addition to these checks, make sure that there are no residual chroma and burst signals.) Then, connect the scope to the Chroma signal terminal of the S Video Input terminal and check that the chroma signal has a burst signal amplitude of 0.3Vp-p and the burst signal waveform is flat. And check that the amplitude ratio of burst signal to chroma signal is 0.30 : 0.66. The Y and chroma signals used for electrical alignment are shown in Fig. 7-2-2.

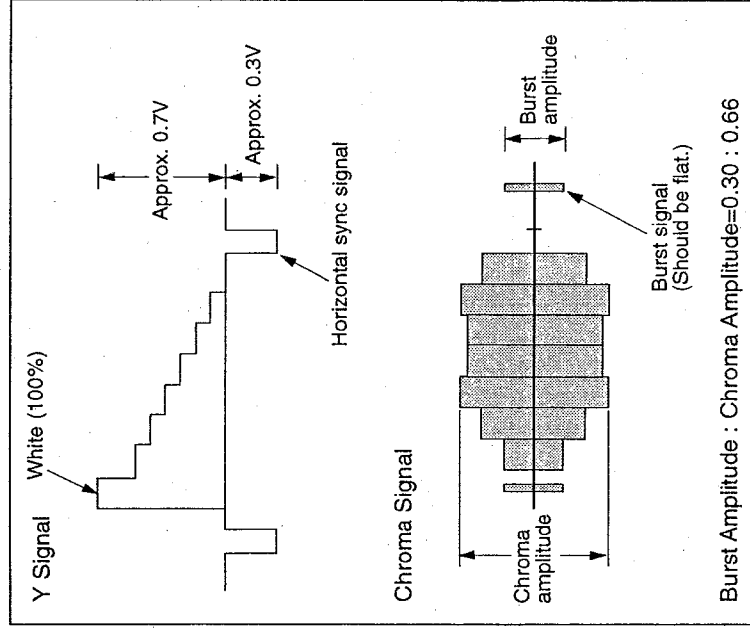


Fig. 7-2-2 Color Bar Signals of Pattern Generator

Note : VIDEO input usually selected in this set. To select S VIDEO input, use remote commander to enter the MENU mode and change Video Input of Line 3 in mode setting from Video to S Video.

Unless otherwise specified, place the switches and controls of this unit in the following positions:

- **Input Select** switch LINE 2

2) VIDEO Input

Connect an oscilloscope to the Video Input terminal. Check that the synchronizing signal of the Y signal has an amplitude of approximately 0.7V and that the burst signal has an amplitude of approximately 0.3V and its waveform is flat. And check that the level ratio of burst signal to "red" signal is 0.30 : 0.66.

The video signal (color bar) used for electrical aligning this unit is shown in Fig. 7-2-3.

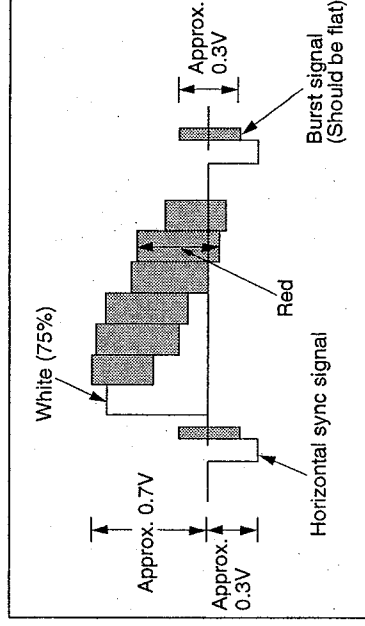


Fig. 7-2-3 Color Bar Signals of Pattern Generator

2-1-4. VHS Alignment Tape

- Contents of KRV-51P

	Mode	Period	Video signal	Audio signal	
				Hi-Fi	Normal
1	SP	7 minutes	Color bar	400Hz (L/R)	400Hz
2		3 minutes	Monoscope		
3	LP	7 minutes	Color bar		
4		3 minutes	Monoscope		

2-1-5. Video 8 Alignment Tape

The following alignment tapes are available.

The tape specified in the signal column for the adjustment to be performed should be used.

Note that if no tape code is specified for the adjustments in which alignment tapes for operation check may be used.

Alignment Tape	Record Mode	Tape Type	Tape Speed	Contents of Record		Application
				Video Area	PCM Area	
Tracking WR5-1CP	L	MP	SP	CH2 : 1MHz tape path adjustment signal Switching position adjustment marker (CH1 : 9MHz)		Tape path adjustment Switching position adjustment
Video frequency characteristic WR-7CE	E	ME	SP	RF sweep 0~15MHz Marker 2, 4.5, 7, 8.5, 10MHz		Frequency characteristic
Operation check WR5-5CSP	L	MP	SP	- Video signal Color bar 4min. Monoscope 4min. - Audio signal (AFM) 400Hz 60% modulated	Audio signal (PCM) Monoscope portion 20Hz 20sec. } This cycle 400Hz 20sec. } is repeated 14Hz 20sec. } 4 times.	Operation check
					Color bar portion 1kHz, 4min. 400Hz, 8min.	
					- Video signal Color bar 4min. Monoscope 4min. - Audio signal (AFM) 400Hz 60% modulated	
AFM stereo operation check WR5-9CS	L	MP	SP	- Video signal Color bar 4min. Monoscope 4min. - Audio signal (AFM) 400Hz 60% modulated	Audio signal (PCM) 400Hz	AFM stereo operation check
					Audio signal (PCM) 400Hz, 8min.	

Note : Recording Mode

L Conventional mode

E Hi8 (High Band) mode

Tape Type

MP Metal powder tape

ME Metal evaporated tape

The color bar signal recorded on these alignment tapes are shown in Fig. 7-2-4.

Note : This waveform is measured at the VIDEO OUT terminal (terminated at 75Ω).

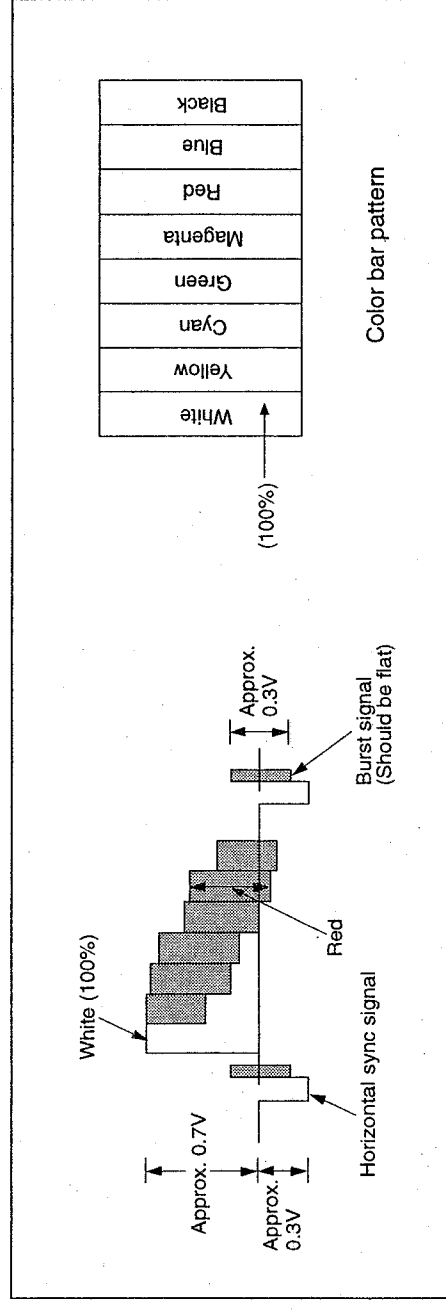


Fig. 7-2-4 Color Bar Signal of Alignment Tape

2-1-6. Input/Output Levels and Impedance

Video input :

LINE-1 (EURO-AV)

Pin 20

LINE-2 IN

(phono jack) (1)

Input signal : 1Vp-p, 75ohms, unbalanced,
sync negative

LINE-1 (EURO-AV)

Pin 19

LINE OUT

(phono jack) (1)

Output signal : 1Vp-p, 75ohms, unbalanced,
sync negative

S VIDEO input :

LINE-2 IN

(4-pin, mini-DIN) (1)

Luminance (Y) : 1Vp-p, 75ohms,

unbalanced, sync negative

Chrominance (C) : 0.3Vp-p, (color burst),

75ohms, unbalanced

S VIDEO output :

LINE-1 (EURO-AV)

Y : Pin 19

C : Pin 15

LINE OUT

(4-pin, mini-DIN)

Y : 1Vp-p, 75ohms, unbalanced,

sync negative

C : 0.3Vp-p, (color burst), 75ohms,

unbalanced

LINE-1 (EURO-AV)

R : Pin 2

L : Pin 6

LINE-2 IN

(phono jack) (2)

Input level : -7.5dBs (0dBs=0.775Vrms)

Input impedance : more than 47kilohms

LINE-1 (EURO-AV)

R : Pin 1

L : Pin 3

LINE OUT

(phono jack) (2)

Standard level : -7.5dBs at load impedance

47kilohms

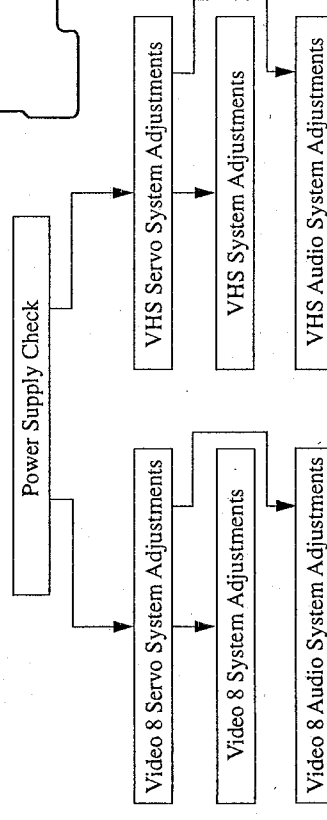
Output impedance : less than 10kilohms

2-1-7. Recording Mode (Normal/Hi8) Select

The set selects the recording mode automatically according to the tape type.

2-1-8. Adjustment Sequence

The adjustment should be performed in the following sequence.



2-2. POWER SUPPLY CHECK

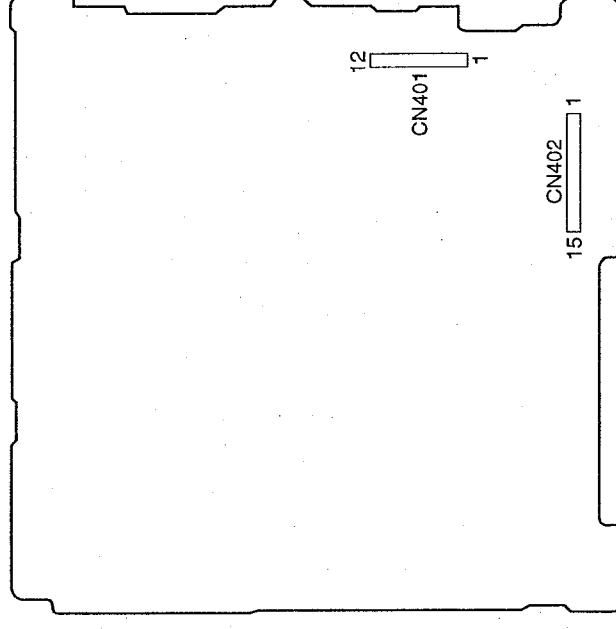
2-2-1. Output Voltage Check (PS-380 Board)

Mode	Playback (Both Video 8 and VHS)
Measuring Instrument	Digital voltmeter
D 6V Check	
Measurement point	CN401 pin ①, CN402 pin ①
Specified value	5.8 ± 0.1Vdc
SW 9V Check	
Measurement point	CN402 pin ③
Specified value	9.00 ± 0.25Vdc
UN 6V Check	
Measurement point	CN401 pins ④, ⑤
Specified value	5.8 ± 0.1Vdc
UNREG 13V Check	
Measurement point	CN401 pins ⑦, ⑧, CN402 pins ⑩, ⑪
Specified value	13.3 ± 0.3Vdc
SW -8V Check	
Measurement point	CN402 pin ⑥
Specified value	-8.4 ± 0.4Vdc
SW 5V Check	
Measurement point	CN402 pins ⑤, ⑥
Specified value	5.00 ± 0.12Vdc

[Check Method]

- 1) Each of these supply voltages must meet its specified value.

PS-380 BOARD (CONDUCTOR SIDE)



2-3. SYSTEM CONTROL/TIMER ADJUSTMENT

1. EEPROM Data Initial Value Writing

When the BEPROM (FR-113 board IC002) is replaced, write the EEPROM data initial value before starting the adjustment. Refer to "Page D Memory Map" of section "7-1. SERVICE MODE" for the initial value.

Mode	E-E
Signal	Any signals
Adjustment page	D
Adjustment address	00 to 25, D8 to EF

Input method

- 1) Set the data : 01 to the page : 1, address : 00.
- 2) Select the page D and enter the initial values to the respective addresses.
(Be sure to press the PAUSE button after setting data (initial value) before changing the address.)

2. Timer Clock Adjustment (MV-34 Board)

Adjusts accuracy of the watch.

If this adjustment is poor, the watch will be faster or slower.

Measurement point	IC801 pin ③ (JL833, CLK OUT)
Measuring instrument	Frequency counter (Interval counter mode)
Adjustment element	CT801
Specified value	0.1249995 ± 0.0000005 seconds

Note : Do not adjust CT801 unless IC801 is exchanged.

[Adjustment Method]

- 1) Connect IC801 pin ③ (JL835) to IC802 pin ⑤ (5V). (Setting the adjustment mode)
- 2) Connect a frequency counter as shown below.
- 3) Adjust CT801 for the specified value of oscillating rate.

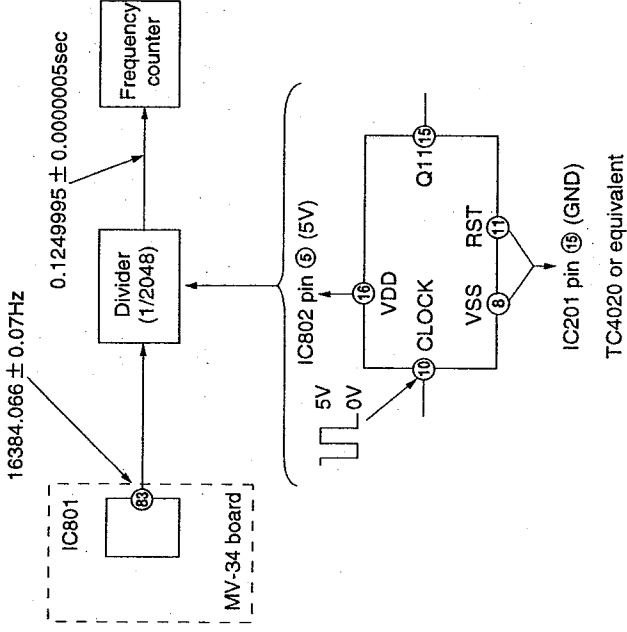


Fig. 7-2-5

2-4. Video 8 SERVO SYSTEM ADJUSTMENT

1. Switching Position Adjustment (MH-18 Board)

If deviated, the skew distortion becomes visible on playback display.

Mode	Playback
Signal	Alignment tape for tracking adjustment (WR5-1CP)
Measurement point	CH1 : CN102 pin ② (RF SWP) CH2 : CN102 pin ③ (PB RF)
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	12, 13
Specified value	$t_1 = 0 \pm 5\mu\text{sec}$

[Adjustment Method]

- 1) Set data : 01 to page : 1, address : 00.
- 2) Set data : 07 to page : D, address : 13.
- 3) Change the data of page : D address : 13 (for coarse adjustment) and address : 12 (for fine adjustment) until the switching position (t_1) satisfies the specified value.

Note : Before changing the address, be sure to press the PAUSE button of the adjustment remote commander. If it is not pressed, the new data will not be saved in memory.

- 4) Press the PAUSE button of the adjustment remote commander.
- 5) Set data : 00 to page : 1, address : 00.

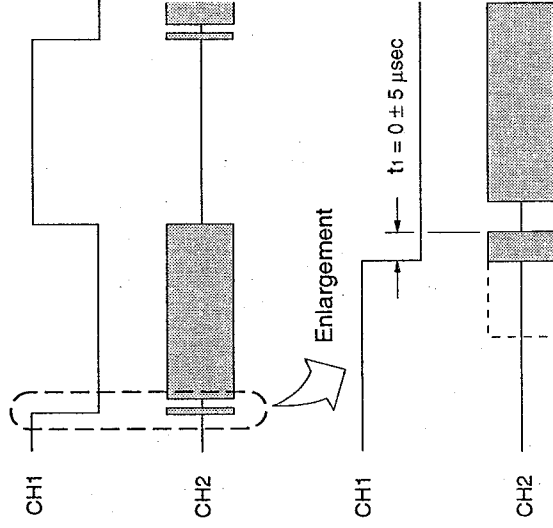


Fig. 7-2-6

2. Capstan Duty Automatic Adjustment

Adjust the duty cycle of the capstan FG signal to improve the servo characteristics. If deviated, jitter will increase.

Mode	Forced record (SP mode)
------	-------------------------

[Adjustment Method]

- 1) Set data : 01 to page : 1, address : 00.
- 2) Set data : 02 to page : 3, address : 00.
- 3) Set data : 07 to page : 3, address : 02.
- 4) Recording starts, the capstan duty is automatically adjusted and recording ends.
- 5) Confirm that "41 : 41 : 41" is displayed on the FL display tube.
- 6) Set data : 00 to page : 3, address : 02.
- 7) Set data : 00 to page : 3, address : 00.
- 8) Turn off the main power.

3. Reverse Direction SLOW Adjustment

Mode	Record and reverse direction SLOW playback (SP mode)
Signal	Color bar
Measurement point	CH1 : CN102 pin ② (RF SWP) CH2 : CN102 pin ③ (PB RF)
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	22
Specified value	A = B

[Adjustment Method]

- 1) Record the color bar signal in the SP mode.
- 2) Playback the recorded segment in the reverse direction SLOW mode.
When noise appears on the playback picture, perform the following adjustment.
- 3) Connect the adjustment remote commander and set the HOLD switch to ON.
- 4) Set data : 02 to page : 3, address : 00.
- 5) Set data : 02 to page : 3, address : 01.
- 6) Change the data of page : 3, address : 1B until amplitude of the portion A and the portion B of the PB RF signal are equal.
(Adjust it in the reverse direction SLOW playback mode.)
- 7) Take reading of the data of page : 3, address : 1B.
- 8) Set data : 01 to page : 1, address : 00.
- 9) Set the data which is read in step 7) into page : D, address : 22.
- 10) Press the PAUSE button of the adjustment remote commander.
- 11) Set data : 00 to page : 1, address : 00.
- 12) Set data : 02 to page : 3, address : 00.
- 13) Set data : 00 to page : 3, address : 01.
- 14) Set data : 00 to page : 3, address : 1B.

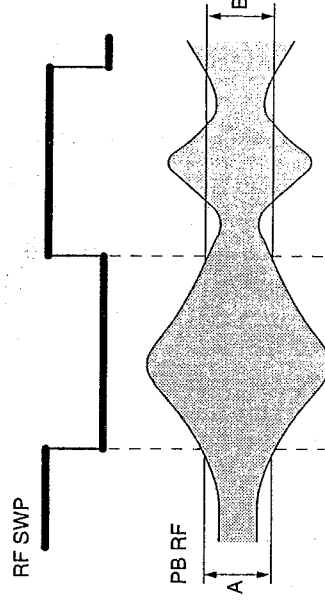


Fig. 7-2-7

4. Double Speed Playback Adjustment

Mode	Record and forward direction double speed playback (Hi8 SP mode)
Signal	Color bar
Measurement point	CH1 : CN102 pin ② (RF SWP) CH2 : CN102 pin ③ (PB RF)
Measuring instrument	Oscilloscope
Adjustment page	D
Adjustment address	24
Specified value	Noise must not appear on the playback picture.

[Adjustment Method]

- 1) Record the color bar signal in the Hi8 SP mode.
- 2) Playback the recorded segment in the forward direction double speed mode.
When noise appears on the playback picture, perform the following adjustment.
- 3) Connect the adjustment remote commander and set the HOLD switch to ON.
- 4) Set data : 02 to page : 3, address : 00.
- 5) Change the data of page : 3, address : 1A until noise does not appear on the playback picture. (Adjust it in the forward direction double speed mode.)
- 6) Take reading of the data of page : 3, address : 1A.
- 7) Set data : 01 to page : 1, address : 00.
- 8) Set the data which is read in step 6) into page : D, address : 24.
- 9) Press the PAUSE button of the adjustment remote commander.
- 10) Set data : 00 to page : 1, address : 00.
- 11) Set data : 02 to page : 3, address : 00.
- 12) Set data : 00 to page : 3, address : 1A.

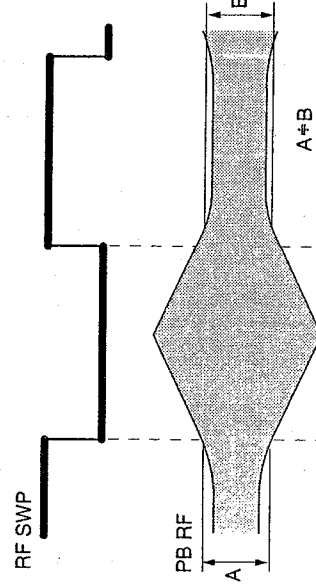


Fig. 7-2-8

2-5. Video 8 VIDEO SYSTEM ADJUSTMENT

2-5-1. Video 8 Video System Adjustment

The color bar video signal which is supplied from pattern generator is used as the video input signal for the record mode video system adjustment. Confirm that the input color bar signal conforms with the specifications specified in Fig. 7-2-2 and Fig. 7-2-3 and the section "Input Signal Check".

Set the switches of the machine to the following position unless otherwise specified.

- VHS/Video 8 selector Video 8
- Input selector LINE 1
- Recording time SP
- LINE OUT 1 selector Video 8

Perform the adjustment in the following order:

[Adjustment Order]

- 1) Playback Frequency Characteristics Adjustment
- 2) SYNC AGC Adjustment
- 3) Chroma Comb Filter Adjustment
- 4) Pre-emphasis Input Level Adjustment
- 5) Hi8 Mode De-emphasis Level Adjustment
- 6) Playback Level Adjustment
- 7) Normal 8 mode De-emphasis Level Adjustment
- 8) Normal 8 Mode Y FM Carrier Frequency
Y FM Deviation Adjustment
- 9) Hi8 Mode Y FM Carrier Frequency
Y FM Deviation Adjustment
- 10) Chroma Emphasis Adjustment
- 11) Y-FM Record Current Adjustment
- 12) Chroma Record Current Adjustment
- 13) Read Clock Adjustment
- 14) AFC Adjustment
- 15) APC Adjustment
- 16) CNR Gain Adjustment

1. Playback Frequency Response Adjustment (RP-211, MH-18 Boards)

Corrects the video head characteristics variation. If deviated, the playback picture looks rough or generates over-modulation noise (black streaking noise).

Note : The adjustment for CH-2 is shown in parenthesis [].

Mode	Playback
Signal	Alignment tape for frequency characteristics adjustment (WR5-7NE)
Measurement point	CN102 pin ③ (PB RF) (MH-18) External trigger : CN102 pin ② (RF SWP) (MH-18) Trigger slope : - [+]
Measuring instrument	Oscilloscope
Adjustment element	RV101 [RV102] (RP-211)
Specified value	4.5MHz level versus 8.5MHz level = 3 : (2 ± 0.2)

[Adjustment Method]

- 1) Adjust RV101 [RV102] until the ratio of 4.5MHz level versus 8.5MHz level of the PB RF output waveform becomes 3 : (2 ± 0.2)

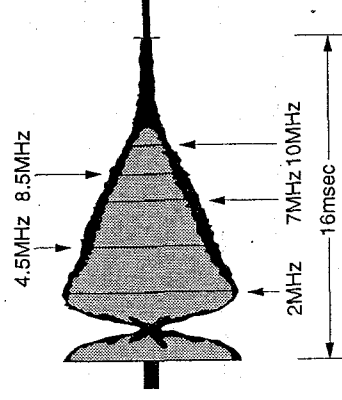


Fig. 7-2-9

2. Sync AGC Adjustment (MH-18 Board)

Adjusts the record Y signal level.

If deviated, the E-E picture or the self record/playback picture will be too bright or too dark. The color will not be reproduced correctly.

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	CN501 pin ②③ (8- Y OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV504 (AGC)
Specified value	A = $1.00 \pm 0.02V_{p-p}$

[Adjustment Method]

- 1) Adjust RV504 until the Y signal level (A) satisfies the specified value.

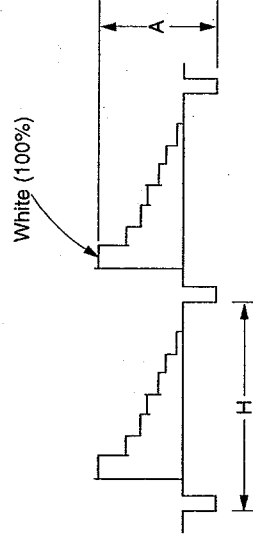


Fig. 7-2-10

3. Chroma Comb Filter Adjustment (MH-18 Board)

Adjusts the level and delay time of the chroma signal comb filter using the 1H delayed video signal.

If deviated, beat will be significant in the playback picture.

Mode	E-E
Signal	Color bar (VIDEO)
Measurement point	IC505 pin ④ (Y COMB OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV508 (C CONB G) RV511 (C COMB P)
Specified value	Residual chroma component is minimized. (30mV _{p-p} or less)

[Adjustment Method]

- 1) Adjust RV508 and RV511 alternately until the residual chroma component is minimized. (30mV_{p-p} or less)

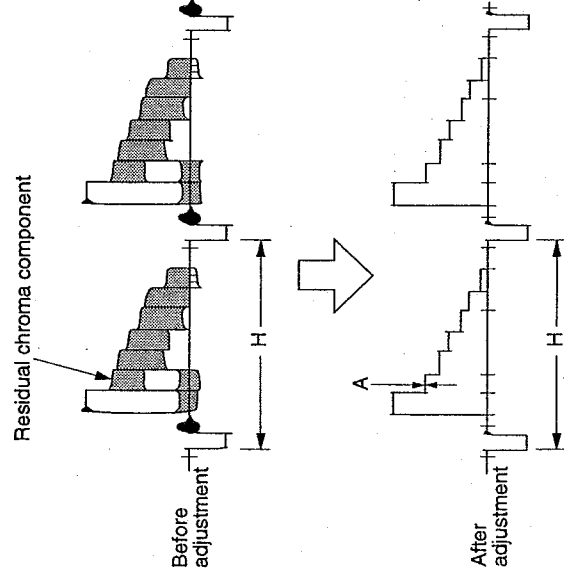


Fig. 7-2-11

4. Pre-emphasis Input Level Adjustment (MH-18 Board)

Set the level of the brightness signal before input to the emphasis circuit. Misalignment will result in excessively dark or bright recorded picture and cause smearing.

Mode	E-E
Signal	Color bar (S VIDEO)
Measurement point	IC505 pin ⑤ (EMPH IN) or IC508 pin ⑦
Measuring instrument	Oscilloscope
Adjustment element	RV513 (EMPH Y)
Specified value	$A = 0.50 \pm 0.02V_{p-p}$

[Adjustment Method]

- 1) Use RV109 and adjust to $A = 0.50 \pm 0.02V_{p-p}$.

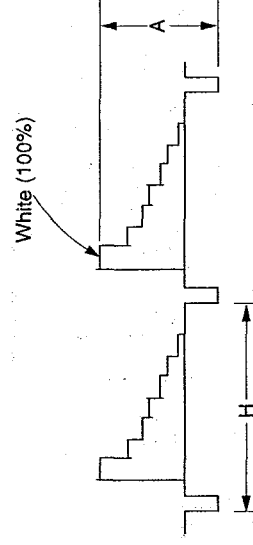


Fig. 7-2-12

5. Hi8 Mode De-emphasis Level Adjustment (MH-18 Board)

Sets the luminance De-emphasis level for Hi8 playback. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape : For operation check, color bar portion (WR5-8CSE)
Measurement point	IC505 pin ⑩ or IC507 pin ①
Measuring instrument	Oscilloscope
Adjustment element	RV512 (E DEEM)
Specified value	$A = 0.50 \pm 0.05V_{p-p}$

[Adjustment Method]

- 1) Use RV512 to adjust to $A = 0.50 \pm 0.05V_{p-p}$.

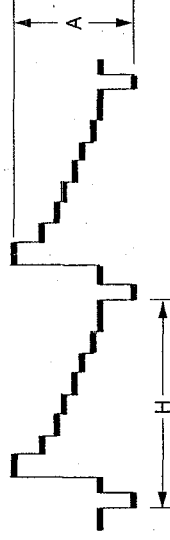


Fig. 7-2-13

6. Playback Level Adjustment (MH-18 Board)

Adjusts the playback Y signal input level. If deviated, the playback picture will be too bright or too dark.

Mode	Playback
Signal	Alignment tape for operation check, color bar segment (WR5-8CSE)
Measurement point	CN501 pin ⑤ (8-Y OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV514 (PB Y)
Specified value	$A = 1.00 \pm 0.02V_{p-p}$

[Adjustment Method]

- 1) Adjust RV514 until the Y signal level (A) satisfies the specified value.

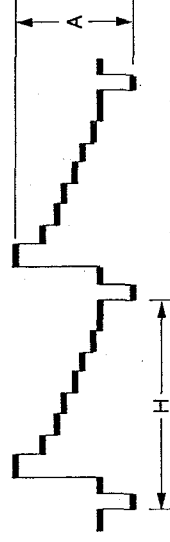


Fig. 7-2-14

7. Normal 8 Mode De-emphasis Level Adjustment (MH-18 Board)

Set the de-emphasis level of the brightness signal during normal playback. Misalignment will cause played picture to be excessively bright or dark. Black or white stretching may occur.

Mode	Playback
Signal	Alignment tape : For operation check, color bar portion (WR5-5CSP)
Measurement point	CN501 pin ③ (8-Y OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV510 (L DEEM)
Specified value	$A = 1.00 \pm 0.02V_{p-p}$

[Adjustment Method]

- 1) Use RV510 to adjust to $A = 1.00 \pm 0.02V_{p-p}$.

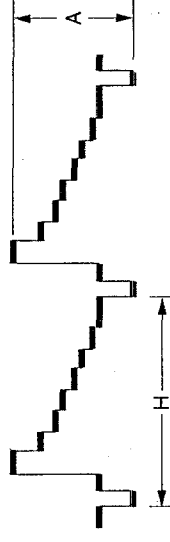


Fig. 7-2-15

8. Normal 8 Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Set the frequency deviation of the modulated brightness signal during normal mode recording. Misalignment will cause recorded picture to be excessively bright or dark. Black or white stretching may occur.

(1) Normal 8 Mode Y FM Carrier Frequency Adjustment (MH-18 Board)

Mode	E-E
Signal	No signal
Measurement point	IC505 pin ⑨ (Y RF OUT)
Measuring instrument	Frequency counter
	Oscilloscope
Adjustment element	RV505 (L CARR)
Specified value	$4.38 \pm 0.05\text{MHz}$

Note : A frequency counter should be connected through a buffer amplifier (oscilloscope, etc) having a high impedance and a low capacitance.

[Adjustment Method]

- 1) Insert MP type cassette tape.
- 2) Use RV505 to adjust to $4.38 \pm 0.05\text{MHz}$.

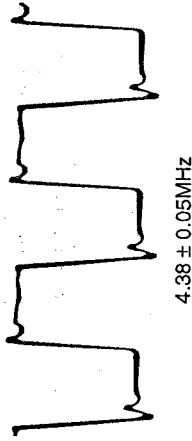


Fig. 7-2-16

(2) Normal 8 Mode Y FM Deviation Adjustment (MH-18 Board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement point	CN501 pin ② (8-Y OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV506 (L DEV)
Specified value	Playback level should be at $1.00 \pm 0.03\text{Vp-p}$

[Adjustment Method]

- 1) Insert MP type cassette tape.
- 2) Record color bar signal.
- 3) Play back the recorded signal.
- 4) Check the playback output level.
- 5) If the specification is not met, rotate RV506 as directed below and then repeat Steps 2) to 4).

	Direction of Rotating RV506
Over specified value	Clockwise (○)
Below specified value	Counterclockwise (○)

- 6) Perform "Normal 8 Mode Y FM Carrier Frequency Adjustment".

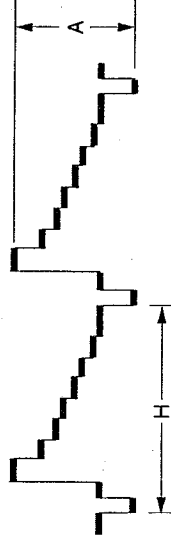


Fig. 7-2-17

9. Hi8 Mode Y FM Carrier Frequency, Y FM Deviation

9. Hi8 Mode Y FM Carrier Frequency, Y FM Deviation Adjustment

Set the frequency deviation of the modulated brightness signal during Hi8 mode recording. Misalignment will cause recorded picture to be excessively bright or dark. Black or white stretching may occur.

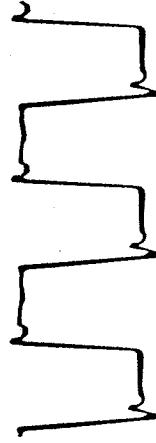
(1) E Mode Y FM Carrier Frequency Adjustment (MH-18 Board)

Mode	E-E
Signal	No signal (select Line in)
Measurement point	IC505 pin ③ (Y RF OUT)
Measuring instrument	Frequency counter Oscilloscope
Adjustment element	RV502 (E CARR)
Specified value	$5.96 \pm 0.05\text{MHz}$

Note : A frequency counter should be connected through a buffer amplifier (oscilloscope, etc) having a high impedance and a low capacitance.

[Adjustment Method]

- 1) Insert ME type cassette tape.
- 2) Use RV502 to adjust to $5.96 \pm 0.05\text{MHz}$.



$5.96 \pm 0.05\text{MHz}$

Fig. 7-2-18

(2) Hi8 Mode Y FM Deviation Adjustment (MH-18 Board)

Mode	Record and playback
Signal	Color bar (S VIDEO)
Measurement point	CN503 pin ③ (8-Y OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV503 (E DEV)
Specified value	Playback level should be at $1.00 \pm 0.03\text{Vp-p}$

[Adjustment Method]

- 1) Insert ME type cassette tape.
- 2) Record color bar signal.
- 3) Play back the recorded signal.
- 4) Check the playback output level.
Specification : $1.00 \pm 0.03\text{Vp-p}$
- 5) If the specification is not met, rotate RV503 as directed below and then repeat Steps 1) to 4).

	Direction of Rotating RV503
Over specified value	Clockwise (↻)
Below specified value	Counterclockwise (↺)

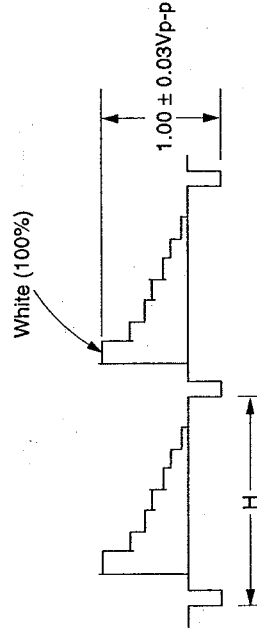


Fig. 7-2-19

10. Chroma Emphasis Adjustment (MH-18 Board)

Adjusts the center frequency of chroma emphasis. If deviated, color of the playback picture will be abnormal.

Mode	Record
Signal	Color bar
Measurement point	IC505 pin ⑥ (B. EMPH OUT)
Measuring instrument	Oscilloscope
Adjustment element	RV507 (C EMPH)
Specified value	The fo component is minimum.

[Adjustment Method]

- 1) Connect the adjustment remote commander. Set the HOLD switch to ON position.
- 2) Set data: 02 to page: 3, address: 00.
- 3) Set data: 04 to page: 3, address: 01.
- 4) Adjust RV507 until the latter half period of the chroma's yellow signal is minimized.
- 5) Set data: 00 to page: 3, address: 01.
- 6) Set the HOLD switch to OFF position.

Allow the latter half of the yellow component to have a minimum amplitude.

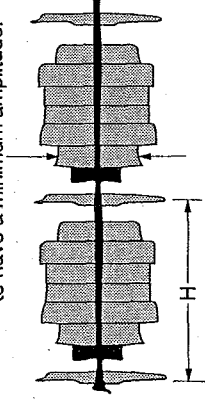


Fig. 7-2-20

11. Recording Y FM Level Adjustment (MH-18 Board)

Set the level of Y FM signal to be recorded on tape. Shift to lower level will result in deteriorated S/N ratio of self-recorded picture. Shift to higher level will cause over-modulation noise (black stretching noise) on self-recorded picture.

Mode	E-E
Signal	No signal
Measurement point	Q518 emitter or IC101 pin ⑥ (REC Y RF)
Measuring instrument	Oscilloscope (20MHz bandwidth)
Adjustment element	RV501
Specified value	A = $250 \pm 3\text{mVp-p}$

Note : Set an oscilloscope to 20MHz bandwidth.

[Adjustment Method]

- 1) Insert ME tape.
- 2) Use RV501 to adjust to A = $250 \pm 3\text{mVp-p}$.



Fig. 7-2-21

12. Recording Chroma Level Adjustment (MH-18 Board)

Set the level of the chroma signal to be recorded on tape. Shift to lower level will result in deteriorated S/N ratio of the chroma signal of self-recorded picture.

Shift to higher level will result in deteriorated S/N ratio of the Y signal in darker color portion of self-recorded picture and cause white stretching noise.

Mode	E-E
Signal	Color bar
Measurement point	Q536 emitter
Measuring instrument	Oscilloscope (20MHz bandwidth)
Adjustment element	RV509 (REC C)
Specified value	Adjust so that the red color portion of the chroma signal is at $160 \pm 2\text{mVp-p}$.

[Adjustment Method]

- 1) Insert ME type cassette tape.
- 42) Adjust RV509 so that the flat portion of the chroma signal red component has the level $160 \pm 2\text{mVp-p}$.

Adjustment so that the flat portion of the chroma signal RED component has the level $160 \pm 2\text{mVp-p}$.

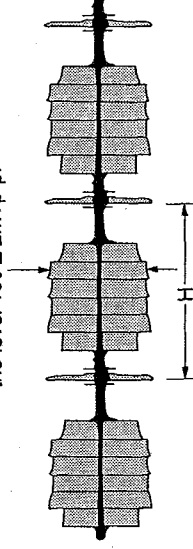


Fig. 7-2-22

2-6. Video 8 AUDIO SYSTEM ADJUSTMENT

- The color bar video signal is used as the video input signal for the audio system adjustment.
- Set the switches of the machine to the following position unless otherwise specified.

VHS/Video 8 selector Video 8
 Input selector LINE 1
 LINE OUT 1 selector Video 8
 Recording time SP
 Video 8 audio input (note 1) Stereo
 Audio monitor (note 2)

When stereo tape is played back Stereo

When bilingual tape is played back Main/left channel

Note 1 : Set from the menu display.

Note 2 : Set from remote commander.

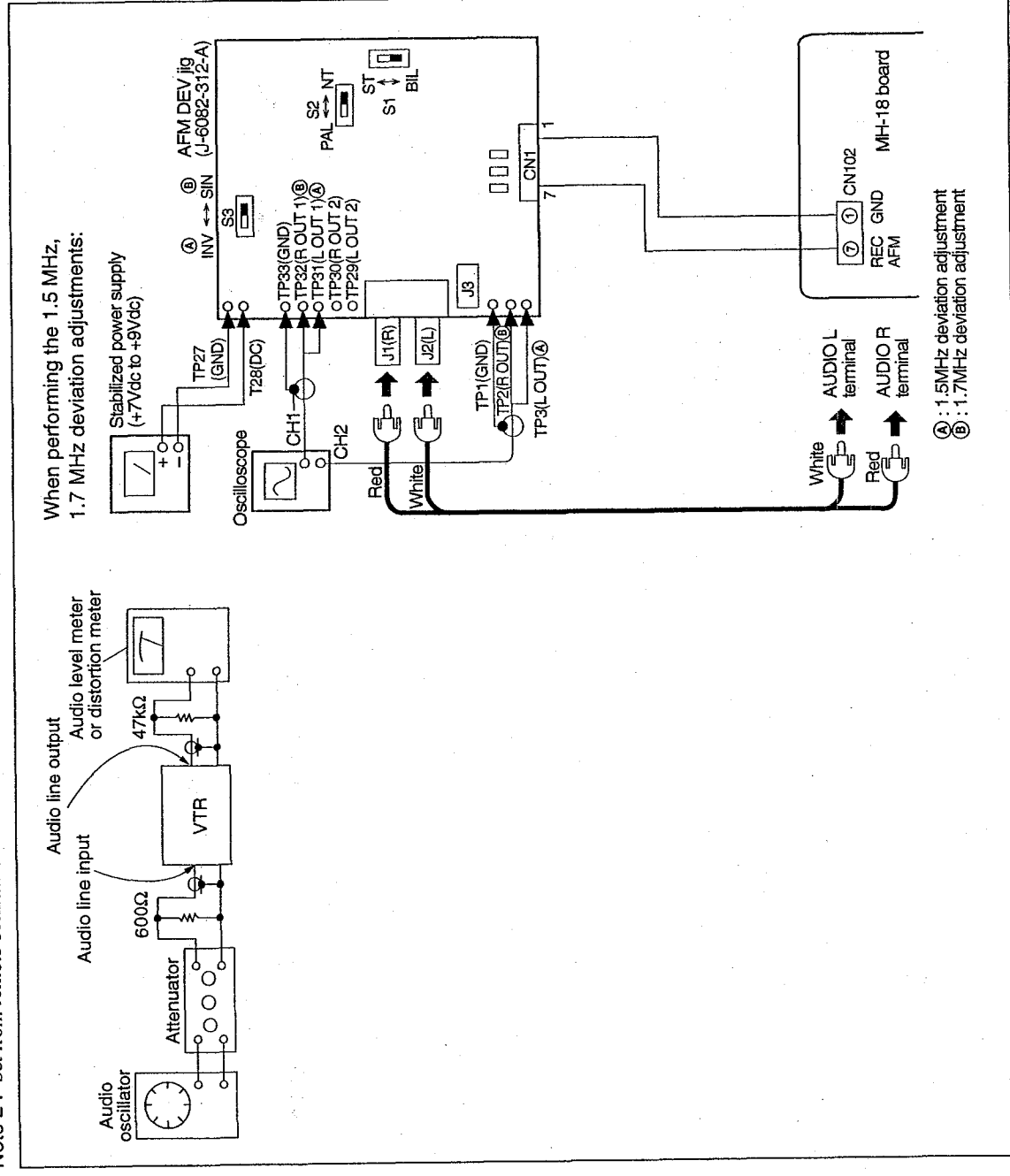
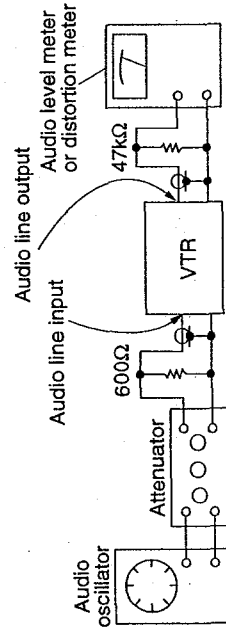


Fig. 7-2-23

2-6-1. Video 8 Audio System Adjustment

[Adjustment Order]

- 1) 1.5 MHz Carrier Frequency and Level Check
- 2) 1.5 MHz Deviation Adjustment
- 3) 1.7 MHz Deviation Adjustment
- 4) Band-pass Filter Adjustment
- 5) E-B Output Level Check
- 6) Overall Frequency Response Characteristics Check
- 7) Over Level Characteristics and Distortion Check
- 8) Overall Noise Level Check
- 9) Separation Adjustment

1. 1.5 MHz Carrier Frequency and Level Check (MH-18 Board)

Mode	Record
Signal	No signal
Measurement point	CN102 pin ⑦ (REC AFM)
Measuring instrument	Frequency counter and oscilloscope (Note 1)
Specified value	Level : $A = 165 \pm 20\text{mVp-p}$ Frequency : $f = 1500.3 \pm 3\text{ kHz}$

Note 1 : Use the high impedance ($1\text{M}\Omega$ or more) and low capacitance (20pF or less) probe.

Note 2 : Connect IC201 pin ⑧ with GND using jumper.

[Check Method]

- 1) Confirm that frequency and level of the 1.5MHz carrier signal satisfies the specified value.

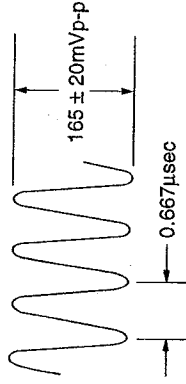


Fig. 7-2-24

2. 1.5 MHz Deviation Adjustment (MH-18 Board)

Sets the spectrum of the L-channel ($L + R/2$ signal) which is modulated during recording. If deviated, audio signal crosstalk during record and playback deteriorate and the audio level will decrease.

Mode	Record
Signal	Connect the AFM DEV adjustment jig output signal to the audio LINE IN 1 terminal left and right channels.
Measurement point	CH1 : TP31 of AFM DEV adjustment jig CH2 : TP3 of AFM DEV adjustment jig
Measuring instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment element	RV203 (1.5M DEV)
Specified value	The level difference between CH1 and CH2 signals must be 40mV or less.

[Connection]

- 1) Connect CN2 of the AFM DEV adjustment jig to CN102 of the MH-18 board.
- 2) Connect the audio output terminal (J1, J2) of the AFM DEV adjustment jig to audio LINE IN 1 terminal of this machine.
- 3) Connect DC power supply (+7 to +9Vdc) to TP28 (DC) and TP27 (GND) of the AFM DEV adjustment jig.
- 4) Set the switches of the AFM DEV adjustment jig to the following positions.

S1 ST position
S2 NT position
S3 SIN position

[Adjustment Method]

- 1) Calibrate the CH1 and CH2 VERT GAIN of an oscilloscope to the unity gain.
- 2) Set an oscilloscope to ADD mode and set CH2 to INV mode.
- 3) Adjust RV203 for minimum audio level difference between CH1 and CH2.

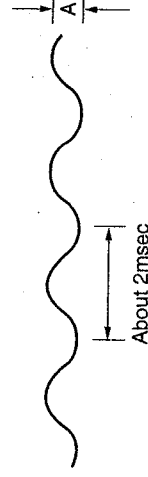


Fig. 7-2-25

3. 1.7 MHz Deviation Adjustment (MH-18 Board)

Sets the spectrum of the R-channel (L-R/2 signal) which is modulated during recording. If deviated, audio signal crosstalk during record and playback deteriorate and the audio level will decrease.

Mode	Record
Signal	Connect the AFM DEV adjustment jig output signal to the audio LINE IN 1 terminal left and right channels.
Measurement point	CH1 : TP32 of AFM DEV adjustment jig CH2: TP2 of AFM DEV adjustment jig
Measuring instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment element	RV201 (1.7M DEV)
Specified value	The level difference between CH1 and CH2 signals must be 40mV or less.

[Connection]

- 1) Connect CN2 of the AFM DEV adjustment jig to CN102 of the MH-18 board.
- 2) Connect the audio output terminal (J1, J2) of the AFM DEV adjustment jig to audio LINE IN 1 terminal of this machine.
- 3) Connect DC power supply (+7 to +9Vdc) to TP28 (DC) and TP27 (GND) of the AFM DEV adjustment jig.
- 4) Set the switches of the AFM DEV adjustment jig to the following positions.

S1 ST position
S2 NT position
S3 INV position

[Adjustment Method]

- 1) Calibrate the CH1 and CH2 VERT GAIN of an oscilloscope to the unity gain.
- 2) Set an oscilloscope to ADD mode and set CH2 to INV mode.
- 3) Adjust RV201 for minimum audio level difference between CH1 and CH2.

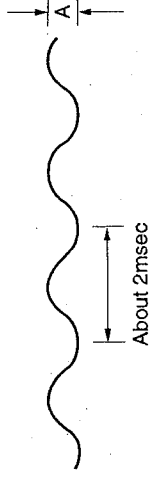


Fig. 7-2-26

4. Band-pass Filter Adjustment (MH-18 Board)

Adjusts the pass band frequency of the band-pass filter so that the AFM signal can be correctly separated from the playback RF signal. If deviated, identification error of monaural and stereo can occur, and noise and distortion will increase when playing back a large sound.

Mode	Playback
Signal	Alignment tape For AFM deviation check (WR5-9CS)
Measurement point	Audio LINE OUT 1 terminal, left or right channel
Measuring instrument	Audio distortion meter
Adjustment element	RV202 (BPF ADJ)
Specified value	The right and left channels must have the same amount of distortion (0.1% or less) with minimum distortion (1 to 1.5%)

[Adjustment Method]

- 1) Select the "MAIN/LEFT" channel using the "AUDIO MONITOR" button of the remote commander.
- 2) Adjust RV202 for minimum distortion.
- 3) Select the "MAIN/RIGHT" channel using the "AUDIO MONITOR" button of the remote commander.
- 4) Adjust RV202 for minimum distortion.
- 5) Repeat steps from 1) to 4) until the right and left channels must have the same amount of distortion with minimum distortion.

5. E-E Output Level Check (MH-18 Board)

Mode	E-E
Signal	400 Hz, -7.5 dBs Audio LINE IN 1 terminal, Right [Left]
Measurement point	Audio LINE OUT terminal, Right [Left]
Measuring instrument	Audio level meter
Specified value	-7.5 ± 3dBs

[Check Method]

- 1) Confirm that the 400Hz signal level satisfies the specified value.

6. Overall Frequency Characteristic Check

Note : Measurement point during SUB channel check is shown in [1].

Mode	Self-record playback (Bilingual mode) (Note 1, Note 2)
Signal	A 400Hz, -17.5dBs B 20Hz, -17.5dBs C 14kHz, -17.5dBs : Audio Line Input terminals, left and right
Measurement point	Audio Line Output terminals, left and right
Measuring instrument	Audio level meter
Specified value	The playback output levels of 20Hz should be $-3 \pm 3\text{dB}$ and 14kHz should be $0 \pm 3\text{dBs}$ with 400Hz playback output level at 0dBs.

Note 1 : Bilingual mode recording.

Select "STEP UP MENU 2", "Video 8 AUDIO L IN : BIL" on the menu screen and press "EXECUTE" button.

Note 2 : Select "MAIN/SUB" by pressing "AUDIO MONITOR" button of the remote commander.

[Check Method]

- 1) Record signals A to C in turn in bilingual mode. (Note 1)
- 2) Play back the recorded portion. (Note 2)
- 3) Check that the frequency response characteristics satisfies the specified value.

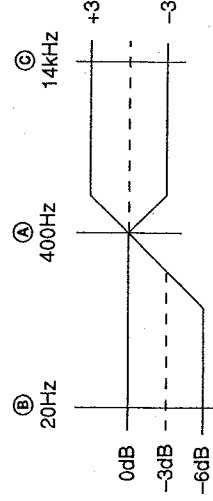


Fig. 7-2-27

7. Overall Distortion Factor, Level Check

Note : Measurement point and specified value during SUB channel check are shown in [1].

Mode	Self-record playback (Bilingual mode) (Note 1, Note 2)
Signal	400Hz, -17.5dBs : Audio Line Input terminals, left and right
Measurement point	Audio Line Output terminals, left [right]
Measuring instrument	Audio level meter and audio distortion meter
Specified value	Level : $-7.5 \pm 3\text{dBs}$ [$-7.5 \pm 3\text{dBs}$] Distortion : 1.0% or less [1.5% or less] (Note 3)

Note 1 : Bilingual mode recording.

Select "STEP UP MENU 2", "Video 8 AUDIO L IN : BIL" on the menu screen and press "EXECUTE" button.

Note 2 : Select "MAIN/SUB" by pressing "AUDIO MONITOR" button of the remote commander.

[Check Method]

- 1) Record signal in bilingual mode. (Note 1)
- 2) Play back the recorded portion. (Note 2)
- 3) Check that the distortion factor satisfies the specified value.

Note 3 : These are values when a 200Hz-6kHz BPF is used.

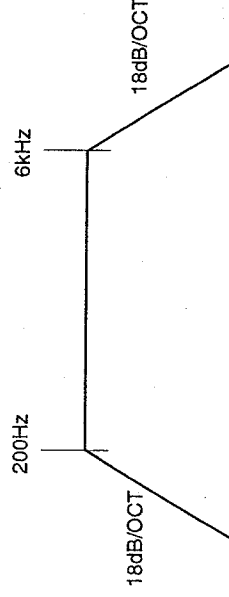


Fig. 7-2-28

8. Overall Noise Level Check

Note : Measurement point and specified value during SUB channel check are shown in [].

Mode	Self-record playback (Bilingual mode) (Note 1, Note 2)
Signal	No signal (Audio Line Input jacks 2, left and right) (Note 3)
Measurement point	Audio Line Output terminals, left [right]
Measuring instrument	Audio level meter (Using IHF-A weighting filter)
Specified value	-68dBs or less [-65dBs or less]

Note 1 : Bilingual mode recording.

Select "STEP UP MENU 2", "Video & AUDIO L IN : BIL" on the menu screen and press "EXECUTE" button.

Note 2 : Select "MAIN/SUB" by pressing "AUDIO MONITOR" button of the remote commander.

Note 3 : Insert a shorting plug into the Audio Line Input Jacks : left and right.

- 1) Record signal in bilingual mode. (Note 1)
- 2) Play back the recorded portion. (Note 2)
- 3) Check that the noise level satisfies the specified value.

9. Separation Check

Mode	Self-record playback
Signal	No signal : Audio LINE IN 1 terminal left [right] 400 Hz, -7.5 dBs : Audio LINE IN 1 terminal left [right]
Measurement point	Audio LINE OUT 1 terminal left [right]
Measuring instrument	Audio level meter (using IHF-A curve weighting filter)
Specified value	-27.5dBs or less

Note : The point in parenthesis [] is the measurement point for the right channel.

[Check Method]

- 1) Insert t shorting plug into the Audio LINE IN 1 terminal left [right]. Input 400 Hz signal at -7.5 dBs to Audio LINE IN 1 terminal right [left] only.
- 2) Record the signal.
- 3) Playback the recorded portion.
- 4) Confirm that the crosstalk level (400 Hz) of the Audio LINE OUST 1 terminal left [right] is -27.5 dBs or less.

2-7. SERVO SYSTEM CHECK

1. RF Switching Position Adjustment (MV-34, RV-50 Boards)

To adjust the link of the A-ch and B-ch of the tape playback outputs. To make the unit compatible with other tapes and units. If this specification is not satisfied, the link will appear on the screen and the screen will be disrupted, etc.

Mode	Playback
Signal	Alignment tape: SP color bar portion (KRV-51P)
Measurement point	CH1 : Video LINE OUT terminal CH2 : CN002 pin ③ (RF SWP) (RV-50 board)
Measuring instrument	Oscilloscope
Adjustment element	RV202 (RF SW POS)
Specified value	$6.5 \pm 0.5H$ ($416 \pm 32 \mu\text{sec}$)

[Adjustment Method]

- 1) Short-circuit between CN101 pin ① and pin ③ on MV-34 board for about 1 second to activate the RF switching position adjustment mode.
- 2) Check that "ADJ-RF" is indicated on FL display.
- 3) Using the program + and - buttons, adjust to $6.5 \pm 0.5H$ ($416 \pm 32 \mu\text{sec}$).
- 4) Press the PAUSE button.
- 5) Press the EJECT button.

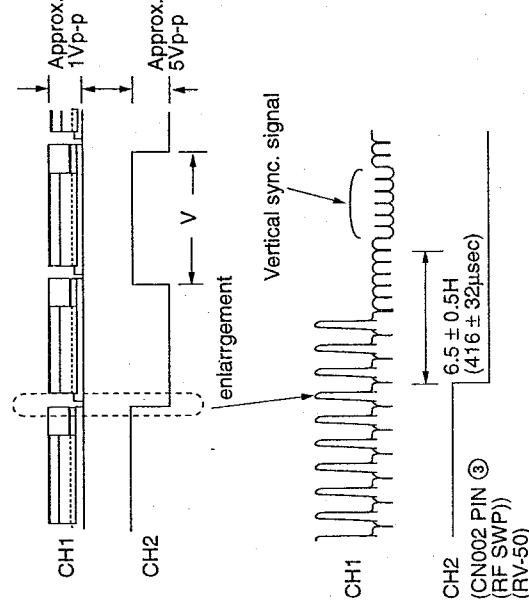


Fig. 7-2-29

2-8. VHS VIDEO SYSTEM CHECKS

Perform the VHS video system adjustment in the following order as a principle:

The color bar video signal which is supplied from pattern generator is used as the video input signal for the record mode video system adjustment. Confirm that the input sync signal and the color burst signal conform with the specifications specified in Fig. 7-2-2 and Fig. 7-2-3 and the section "Input Signal Check".

Set the switches of the machine to the following position unless otherwise specified.

- VHS/Video 8 selector VHS
- Input selector LINE 1
- Recording time Standard (SP)
- LINE OUT 1 selector VHS

Perform the adjustment in the following order:

[Checking Sequence]

- 1) X'tal OSC Check
- 2) SYNC AGC Check
- 3) White clip/Dark clip Check
- 4) Recording Y Level Check
- 5) Recording Chroma Level Check
- 6) Playback Level Check

1. X'tal OSC Check (RV-50 Board)

Mode	Playback
Signal	Alignment tape: SP Color bar portion
Measurement point	Q514 emitter
Measuring instrument	Oscilloscope and Frequency counter
Specified value	4,433,619 $\pm$ 96Hz

Note: A frequency counter should be connected through a buffer amplifier (oscilloscope, etc.) having a high impedance and a low capacitance.

[Check Method]

- 1) Check that the oscillation frequency satisfies the specified value and that the oscillation voltage is $320 \pm 140\text{mVp-p}$.



4,443,619 $\pm$ 96Hz

Fig. 7-2-30

2. SYNC AGC Check (RV-50 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC501 pin ③
Measuring instrument	Oscilloscope
Specified value	A=2.02 $\pm$ 0.14Vp-p

[Check Method]

- 1) Check that the Video signal level (A) satisfies the specified value.

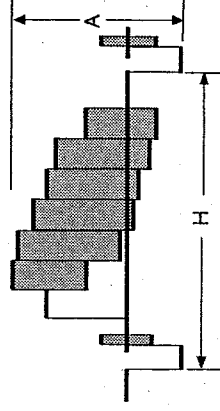


Fig. 7-2-31

3. White Clip/Dark Clip Check (RV-50 Board)

Mode	E-E
Signal	Color bar
Measurement point	IC501 pin ④
Measuring instrument	Oscilloscope
Specified value	White clip : 190 $\pm$ 15% Dark clip : 52 $\pm$ 10%

[Check Method]

- 1) Check that the white clip level is 190 $\pm$ 15% to the white (100%) level.
- 2) Check that the dark clip level is 50 $\pm$ 10% to the white (100%) level.

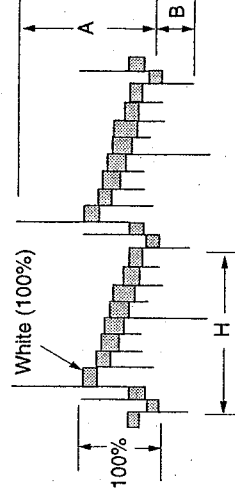


Fig. 7-2-32

4. Recording Y Level Check (RV-50 Board)

Mode	E-E
Signal	No-signal
Measurement point	Q921 emitter
Measuring instrument	Oscilloscope
Specified value	$A=1000 \pm 100\text{mVp-p}$

[Check Method]

- 1) Check that the recording RF signal satisfies the specified value.



Fig. 7-2-33

5. Recording Chroma Level Check (RV-50 Board)

Mode	Recording
Signal	Color bar
Measurement point	Q508 emitter
Measuring instrument	Oscilloscope
Specified value	$A=190 \pm 20\text{mV}$

[Check Method]

- 1) Confirm the amplitude of recording chroma level becomes the specified value.

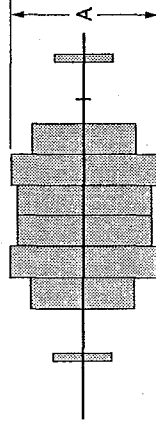


Fig. 7-2-34

6. Playback Level Check (RV-50 Board)

Mode	Playback
Signal Alignment	Alignment tape : SP mode color bar portion
Measurement point	Video LINE OUT terminal
Measuring instrument	Oscilloscope
Specified value	$A=1.00 \pm 0.02\text{Vp-p}$

[Check Method]

- 1) Check that the playback level satisfies the specified value.

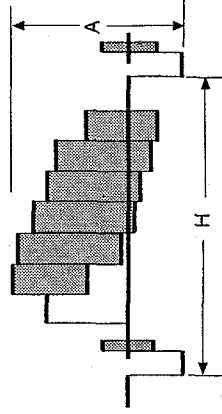
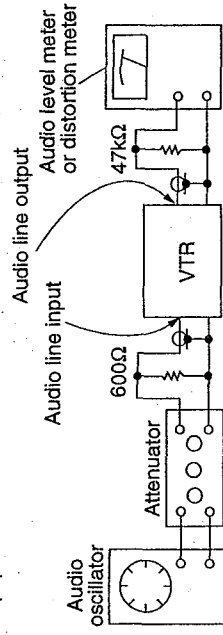


Fig. 7-2-35

2-9. VHS AUDIO SYSTEM ADJUSTMENT

Equipment connection



(Input signal to both L and R channels at the same time.)
 600Ω : 270 (1-249-410-11) + 330 (1-249-411-11)
 $47k$: 1-249-437-11

Fig. 7-2-35

2-9-1. HiFi Audio System Adjustment

Set the switches of the machine to the following position unless otherwise specified.

- VHS/Video 8 selector VHS
- Input selector LINE 1
- Audio monitor Stereo
- Recording time Standard (SP)
- LINE OUT 1 selector VHS

Note : Audio monitor is switched by the remote commander during playback.

[Adjustment Order]

- 1) VCO fo Adjustment
- 2) Band-pass Filter fo Adjustment
- 3) Switching Position Adjustment
- 4) E-E Output Level Check
- 5) Overall Level Check

1. VCO F0 Adjustment (MV-34 Board)

To attain HiFi audio compatibility.

If this specification is not satisfied, the sound will be distorted.

Mode	Recording
Signal	No-signal
Measuring instrument	Frequency counter
1.8MHz adjustment	
Measurement point	CN301 pin ⑤
Adjustment element	RV603 (R-ch)
Specified value	1800±1kHz
1.4 MHz adjustment	
Measurement point	CN301 pin ⑤
Adjustment element	RV601 (L-ch)
Specified value	1400±1kHz

Note : Connect the frequency counter through the buffer amplifier (oscilloscope, etc) with high input resistance (1MΩ or more) and low capacity (10pF or less).

Before 1.4MHz adjustment, connect the RV603, R609 side to ground, and after the adjustment disconnect above mentioned connection.

[Adjustment Method]

- 1) Connect the frequency counter with each measurement points.
- 2) Adjust with RV601 and RV603 so that the frequency satisfies each specified value.

2. Band Pass Filter f0 Adjustment (MV-34 Board)

To separate the carrier accurately and ensure that the filter for cutting the video signal functions normally.
If this specification is not satisfied, the sound will be distorted.

Mode	Playback
Signal	Alignment tape SP color bar or monoscope portion
Measurement point	CN301 pin ⑤
Measuring instrument	Oscilloscope
Adjustment element	RV602
Specified value	See the figure below.

[Adjustment Method]

Adjust the L-ch and R-ch amplitudes to the same level.
(Make the waveform flat.)

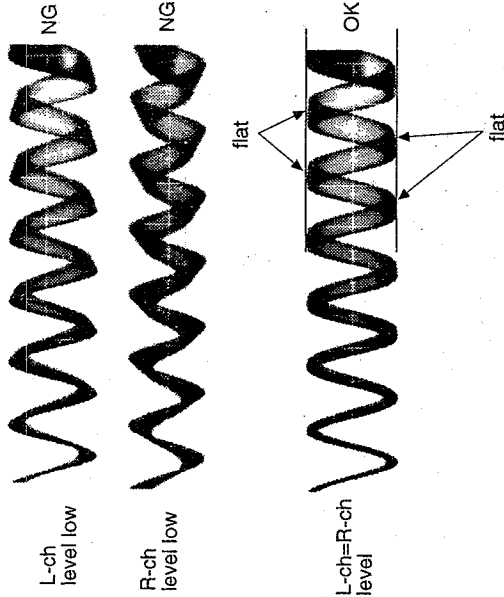


Fig. 7-2-36

3. AF Switching Position Adjustment (MV-34, RV-50 Boards)

To adjust the link of the A-ch and B-ch of the tape playback outputs.
If this specification is not satisfied, the noise will increase and cracking sounds will be produced.

Mode	Playback
Signal	Alignment tape: SP color bar portion
Measurement point	CH1 : JL101 (BPF MONI)(RV-50) CH2 : CN002 pin ③ (RF SWP) (RV-50)
Measuring instrument	Oscilloscope
Specified value	No dropouts in the RF signal

[Adjustment Method]

- 1) Short-circuit between CN101 pin ① and pin ③ on MV-34 board for about 1 second to activate the RF switching position adjustment mode.
- 2) Press the REC button to activate the AF switching position adjustment mode.
- 3) Check that "ADI-HF" is indicated on FL display.
- 4) Using the program + and - buttons, minimize a chipped portion. At this time, confirm that a noisy sound is not heard.
- 5) Press the PAUSE button.
- 6) Press the EJECT button.

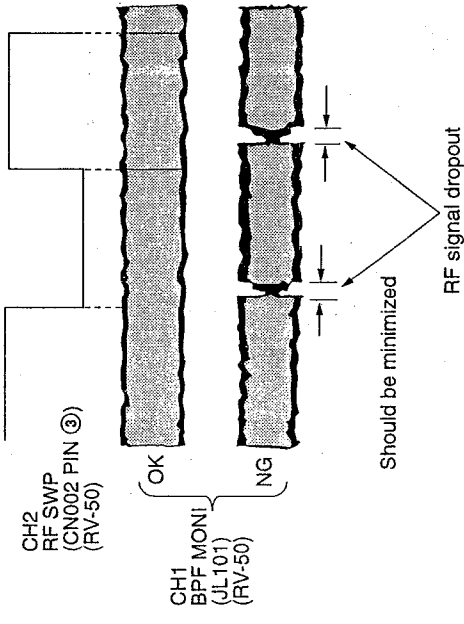


Fig. 7-2-37

2-9-2. Normal Audio System Adjustment

- For the adjustment of the audio system, perform in the SP mode if there is no special notes. Use the alignment tape.

[Connecting Instruments]

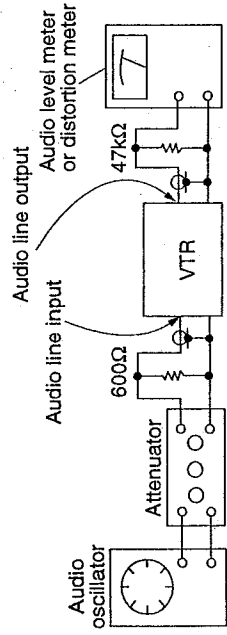


Fig. 7-2-38

- Adjust in the SP mode if there is no special indications.
- Perform the adjustment setting the switch on the following positions.
 - [CHANNEL] switch LINE 1

[Adjustment Method]

- ACE head adjustment.....Refer to the VHS mechanical adjustment manual IV.
- E-E output level check
- Overall Output level and distortion factor check
- Overall noise level check.

1. ACE Head Adjustment

Refer to the "VHS mechanical adjustment manual IV" (9-973-623-11).

2. E-E Output Level Check

Mode	E-E
Signal	400Hz, -7.5dBs : CNJ202 L/R (FL-79)
Measurement point	J901 L/R (MV-34)
Measuring instrument	Audio level meter
Specified value	-7.5 ± 2dBs

[Check Method]

- Input signal of 400Hz and -7.5dBs to the CNJ202 L/R.
- Check that the audio output level is -7.5 ± 2dBs.

3. Overall Output Level and Distortion Factor Check

Mode	Self-record playback
Signal	400Hz, -7.5dBs : CNJ202 L/R (FL-79)
Measurement point	J901 L/R (MV-34)
Measuring instrument	Audio level meter and Distortion meter
Specified value	Playback Level : -7.5 ± 3dBs Distortion: 4.0% or less

[Check Method]

- Input signal of 400Hz and -7.5dBs to the audio input.
- Record signal.
- Playback the recorded portion.
- Check that the output level is -7.5 ± 3dBs.
- Check that the distortion factor is 4.0% or less.

4. Overall Noise Level Check

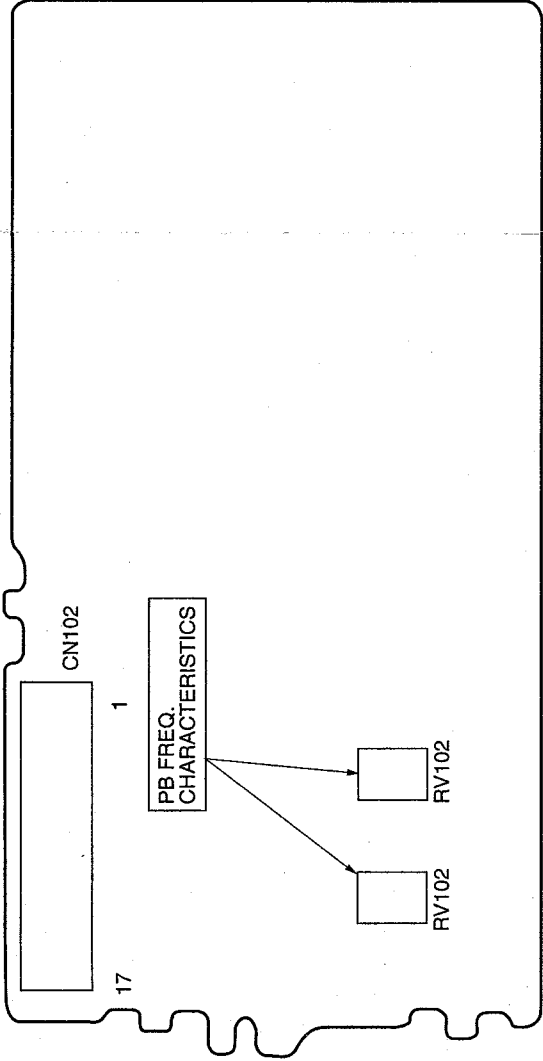
Mode	Self-record playback
Signal	No signal (Insert a shorting plug into the Audio LINE IN terminal)
Measurement point	J901 L/R (MV-34)
Measuring instrument	Audio level meter (IHF-A weighing filter is used)
Specified value	-45.5dBs or less

[Check Method]

- Record.
- Playback recorded portion.
- Check that noise level is -45.5dBs or less.

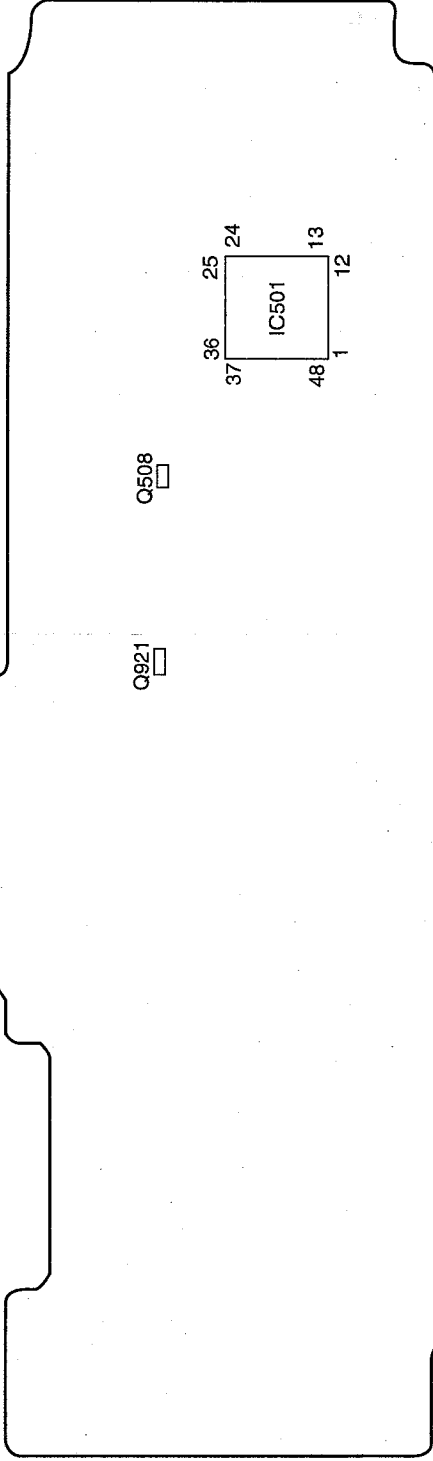
2-10. ADJUSTING PARTS LOCATION

RP-211 BOARD (COMPONENT SIDE)

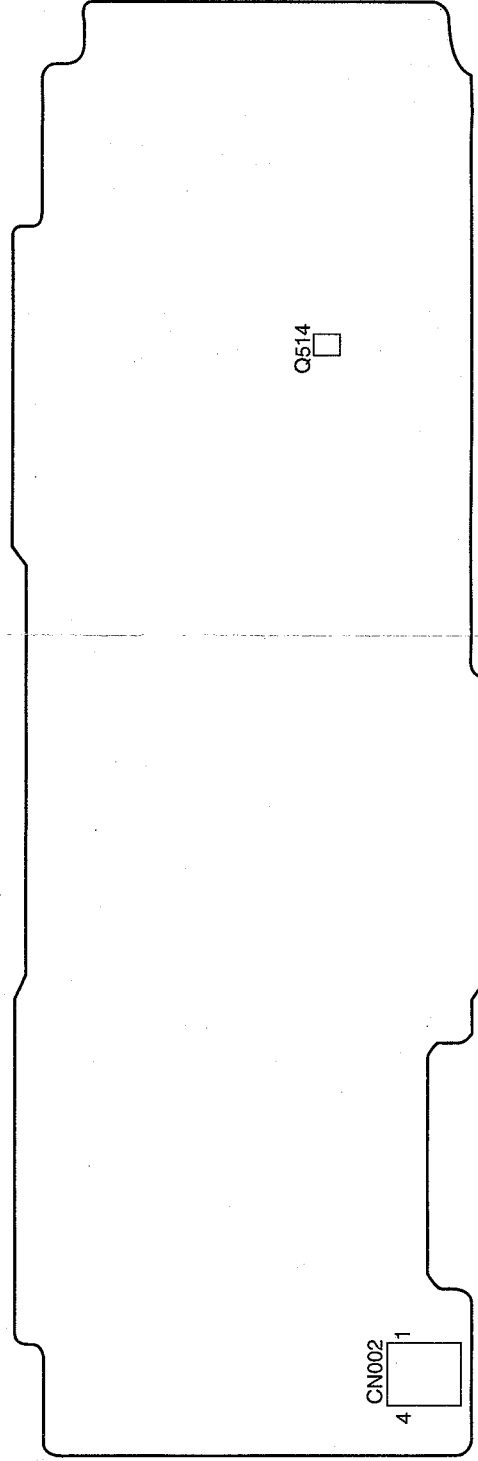


MH-18 BOARD (COI

RV-50 BOARD (COMPONENT SIDE)

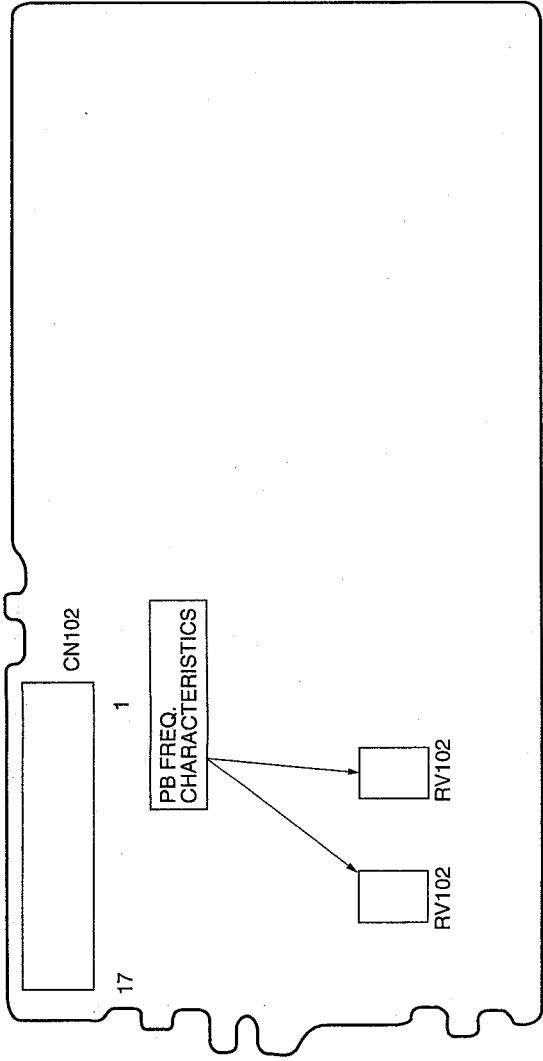


RV-50 BOARD (CONDUCTOR SIDE)

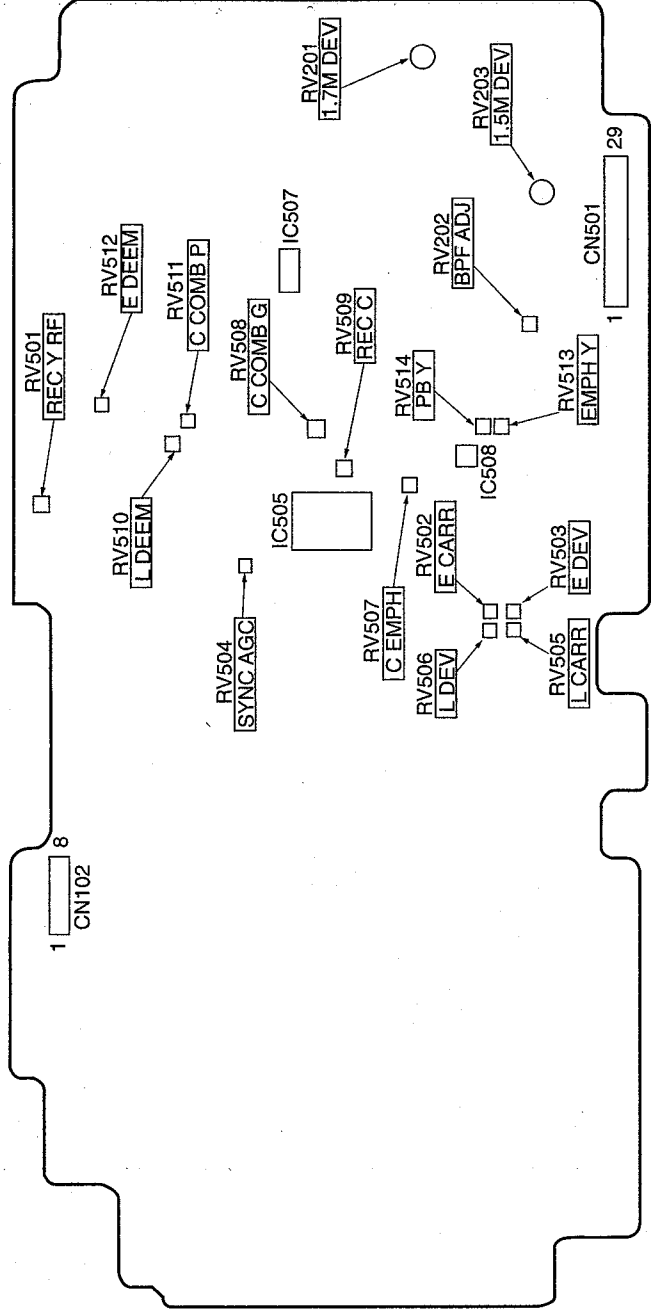


2-10. ADJUSTING PARTS LOCATION

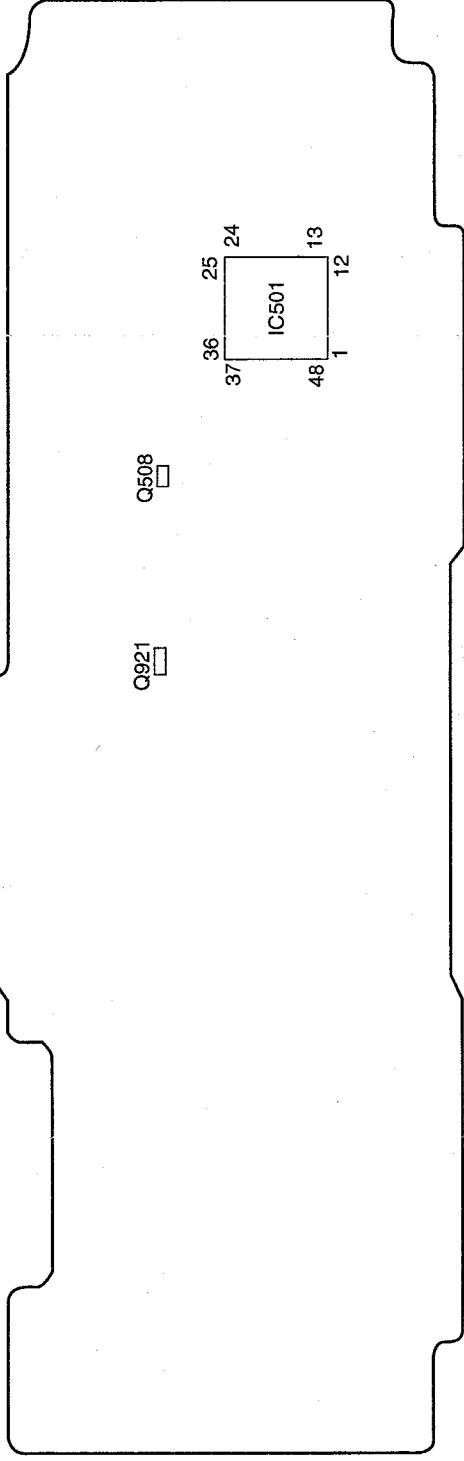
RP-211 BOARD (COMPONENT SIDE)



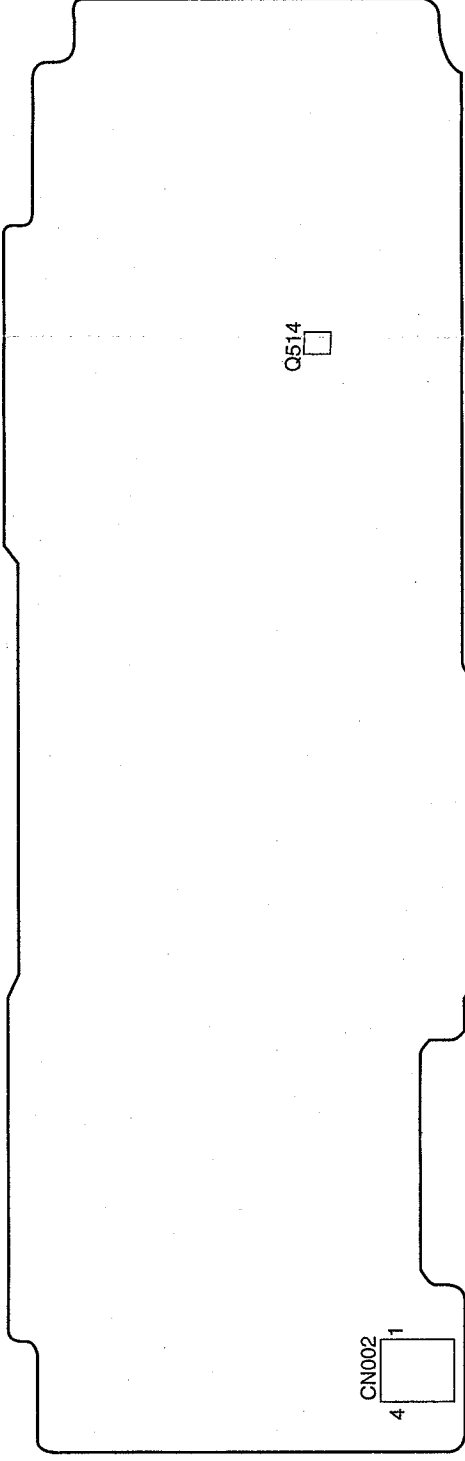
MH-18 BOARD (COMPONENT SIDE)



RV-50 BOARD (COMPONENT SIDE)



RV-50 BOARD (CONDUCTOR SIDE)



IV-34 BOARD (COMPONENT SIDE)

1.8M VCO □ RV601
1.4M VCO □ RV602
BPF to □ RV603

IV-34 BOARD (CONDUCTOR SIDE)

1 3
CN101

IC802

CN403
LANG

CT801
TIMER CLK

IC801

1 20
CN301

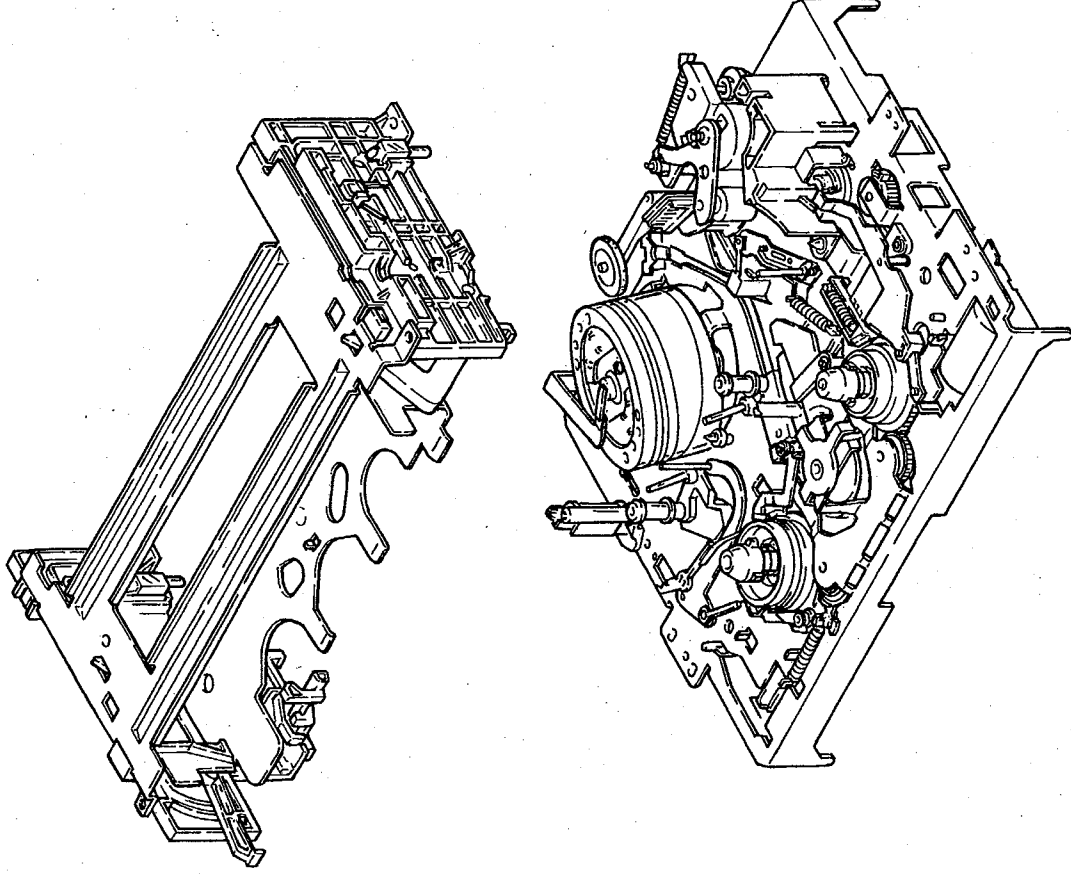
VHS MECHANICAL ADJUSTMENT MANUAL IV



V03056

H MECHANISM

Please use with the service manual.



VHS VIDEO CASSETTE RECORDER
SONY®

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1. PREPARATION FOR MECHANISM CHECK ADJUSTMENT AND REPLACEMENT

Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.

1-1. LOADING AND THREADING PROCEDURE WHEN THE POWER TURNS OFF (Fig. 1-1)

1-1-1. LOADING AND THREADING PROCEDURE WITH HANDS

- 1) Turn cam motor in the arrow **A** direction until loading and threading are end.

1-1-2. LOADING AND THREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

- 1) Applying approx. +9 V (300 mA) to cam motor with regulated DC power supply makes it loading and threading.

Note: When loading and threading without cassette, claws are caught in four positions as following figure (in the order ① → ② → ③ → ④).

So release them with hands.

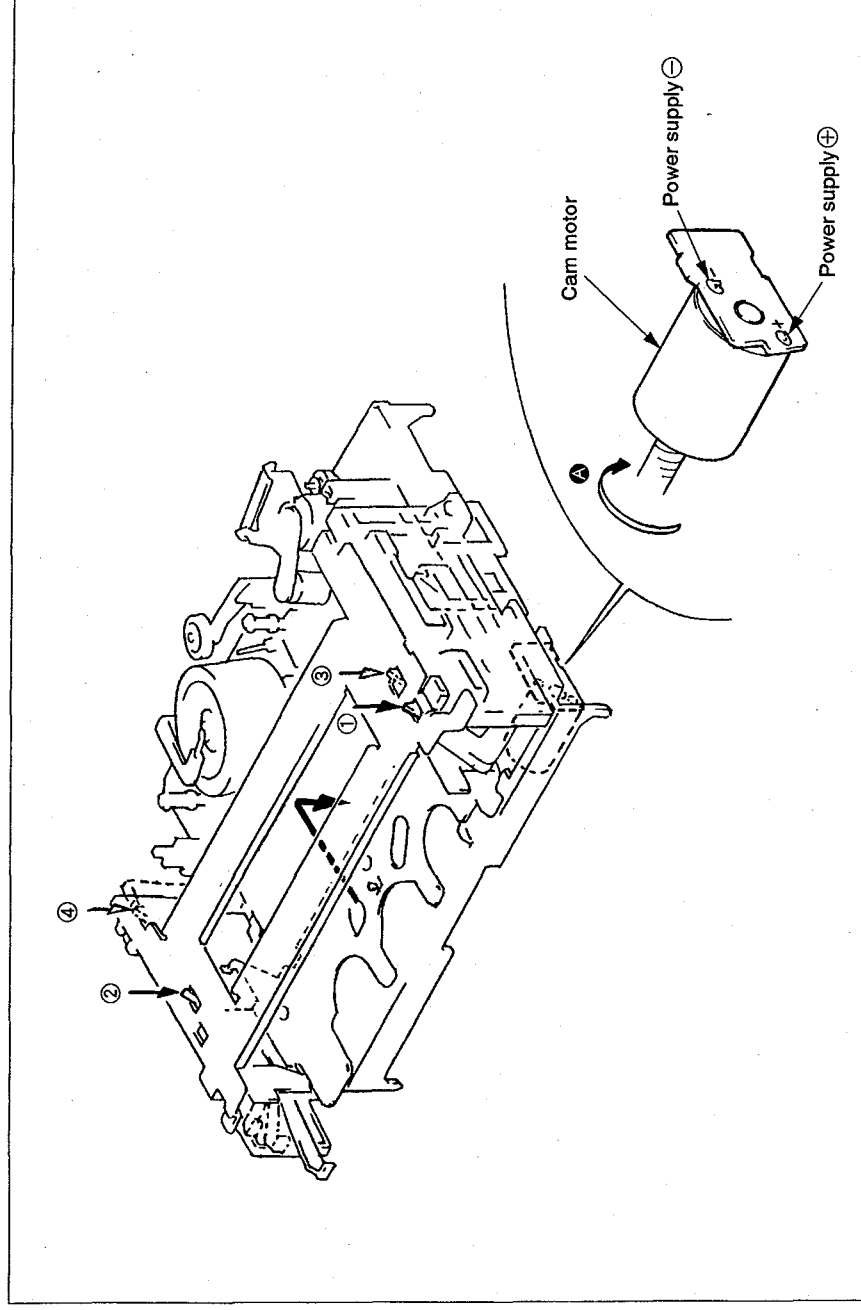


Fig. 1-1

1-2. UNLOADING AND UNTHREADING PROCEDURE WHEN THE POWER TURNS OFF
(Figs. 1-2 and 1-3)

1-2-1. UNLOADING AND UNTHREADING PROCEDURE WITH HANDS

- 1) Turn cam motor in the arrow **B** direction until unthreading is end.
- 2) Turn capstan motor in the arrow **C** direction to take up tape in cassette.
- 3) Turn cam motor in the arrow **B** direction until unloading is end.

1-2-2. UNLOADING AND UNTHREADING PROCEDURE WITH REGULATED DC POWER SUPPLY

- 1) Apply approx. +9 V (300 mA) to contrary polarities of cam motor.
- 2) Unthreading operation begins, tape guides return to their original positions (Unthreading operation is end but tape remains), then stop cam motor by turning power off.

Note: When unloading begins and cassette lid is closed, turn cam motor in the arrow **A** direction to open tape guard.

- 3) Turn capstan motor in the arrow **C** direction to take up tape in cassette.

Note: That tape is not caught at pinch roller. (Fig. 1-3)

- 4) Check that tape is not loosened completely, and apply approx. +9 V (300 mA) to contrary polarities of cam motor with regulated DC power supply. (Fig. 1-2)

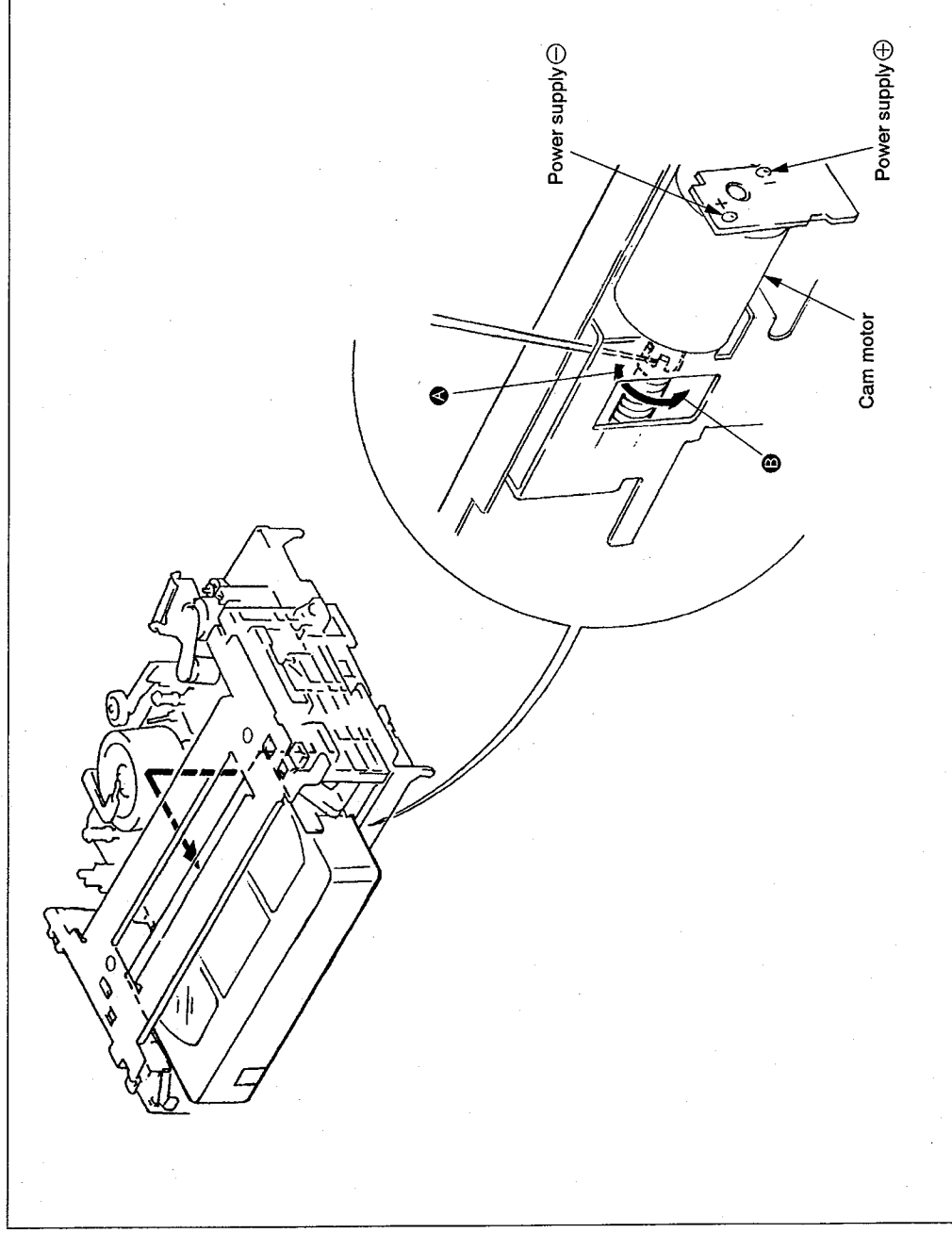


Fig. 1-2

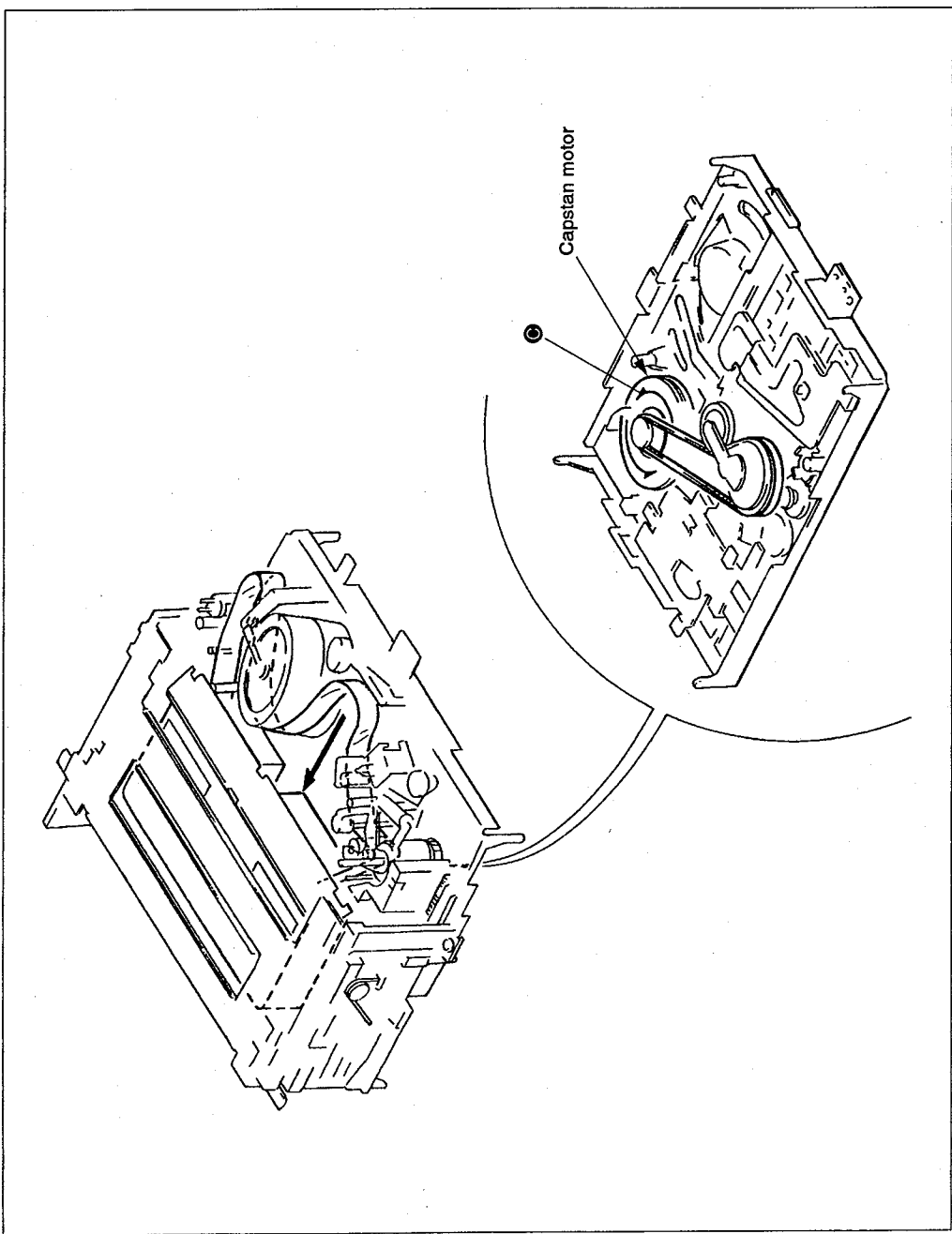


Fig. 1-3

1-3. HOW TO COMPLETE THREADING WITHOUT CASSETTE COMPARTMENT (Fig. 1-4)

Note 1: Put the FL block assembly removed the FL top plate on the bottom not to put dust or grease the top sensor and the end sensor luminous plates or not to scratch them.
(Fig. A)

- 1) Pull out AC plug from wall outlet.
- 2) Shade near the end and top sensors with a black masking tape on the like.
- 3) Press cassette in/rec proof switch with a tip of screwdriver or the like.
- 4) Connect AC plug to wall outlet.
- 5) Release cassette in/rec proof switch by putting off a tip of screwdriver or the like.
(At this time, power turns on, rewind operates for 10 seconds, after that power turns off.)

Note 2: In this condition, each mode can be set to video cassette recorder. (including recording mode)
However, fast forward should be done after rewinding for 15 seconds or more.

Note 3: After above mentioned operation, be sure to return the mode in the following order.

- 1) Remove the tape near the end and top sensors.
- 2) Pull out AC plug from wall outlet to reset the system control microcomputer.

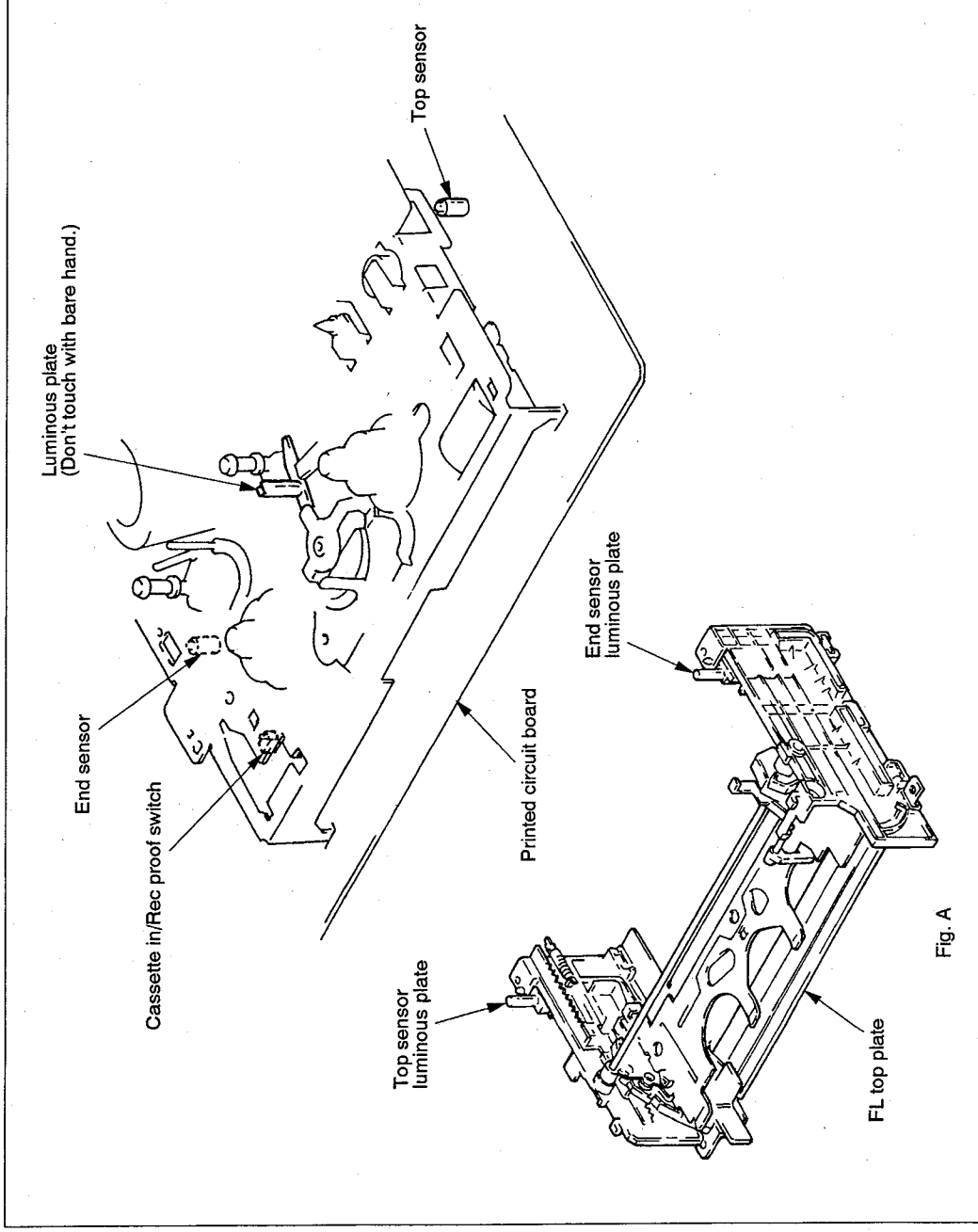


Fig. 1-4

2. PERIODIC CHECK AND REPLACEMENT

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

* The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1. CLEANING OF ROTATING HEAD DISK ASSEMBLY

- 1) Press a chamois cloth (Jig Ref. No. J-9) which has been dipped in cleaning fluid (Jig Ref. No. J-8) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
- 2) Never try to clean by moving the chamois cloth at a vertical angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-2. CLEANING OF THE TAPE MOVEMENT SYSTEM

- 1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in cleaning fluid.

2-3. CLEANING THE DRIVE SYSTEM

- 1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

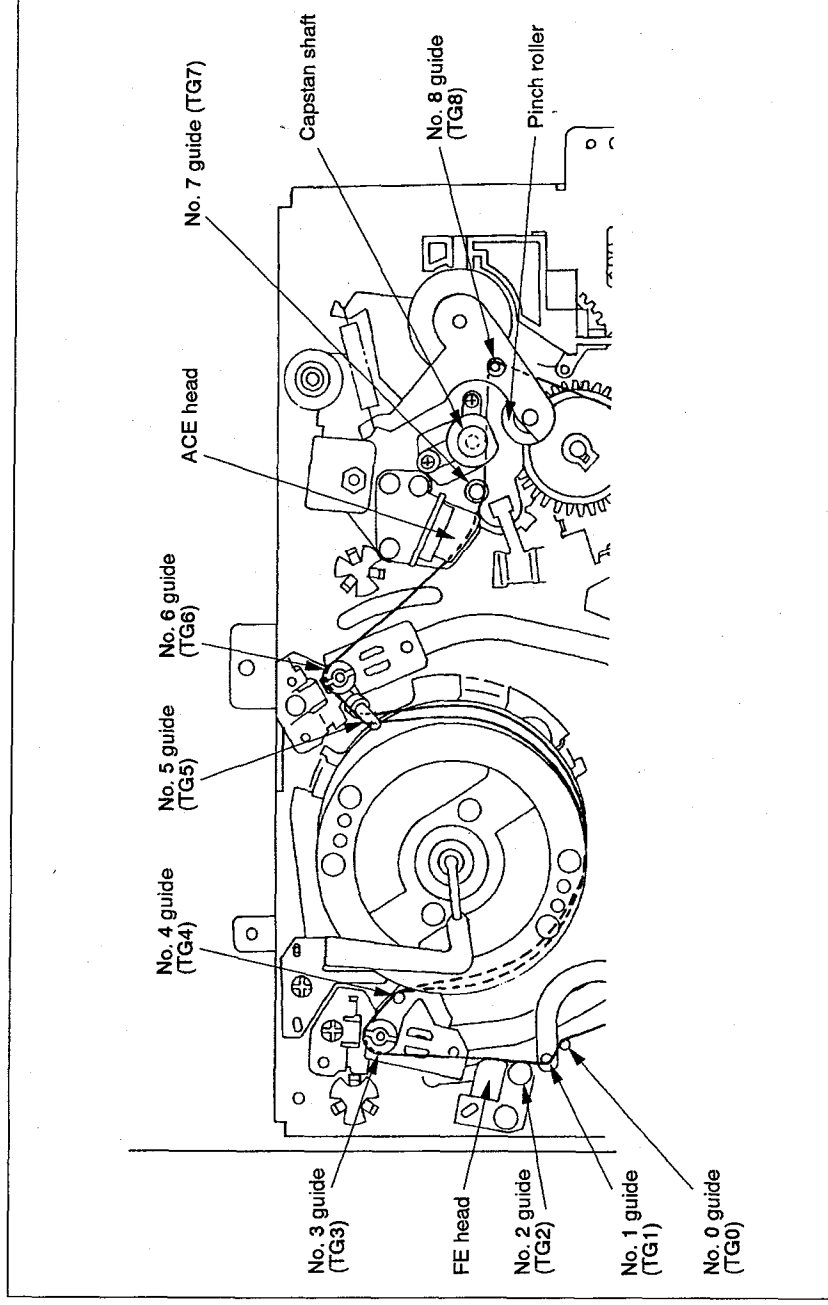


Fig. 2-1 Parts requiring cleaning

2-4. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below, according to users operating hours.

Operating Hours (H)		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Transportation System	Maintenance & Check											
	Cleaning of tape transportation system	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE assembly	○	○	○	○	○	○	○	○	○	○	
Performance Confirmation	Cleaning & degaussing of upper drum assembly	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to 4-1-1. Specified value: adjust to 36 to 44 g·cm (when measured with torque cassette tape)
	Confirmation of brake system	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to section.
	Confirmation of record & playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 70 to 120 g·cm

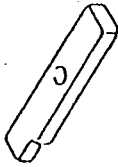
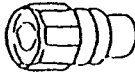
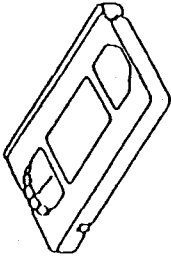
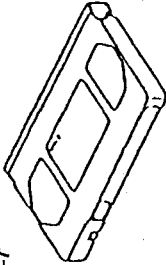
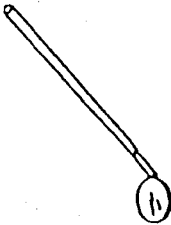
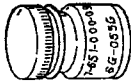
○ Cleaning ☆ Confirmation

Note: On overhaul

When overhauling the unit, replace parts as indicated in the above table.

2-5. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref No.	Name	Part No.	Carved Jig No.	Remarks
J-1	Master Plane	H-7099-279-H		Applicable to S-VHS
J-2	Reel Disk Height Jig	H-7099-038-H		
J-3	Torque Gauge Adaptor	H-7099-035-H		
J-4	0.93 mm Torque Gauge	H-7099-039-H		
J-5	Hex. Wrench	H-7099-202-H		
J-6	Torque Measurement Cassette VHT-063S	J-6082-011-A		For FWD & back tension torque measurement.
	Torque Measurement Cassette VHT-404S	J-6082-012-A		For CUE and review torque measurement.
J-7	Alignment Tape JVC-MH-1 (NTSC) 24HASF-2 (NTSC Hi-Fi) JVC-MH-2 (PAL) JVC-MH-4 (SECAM)	H-7099-046-H H-7099-153-H H-7099-052-H H-7099-053-H		
J-8	Cleaning Fluid	Y-2031-001-0		
J-9	Chamois Leather	2-034-697-00		
J-10	Head Demagnetizer	Widely available		Demagnetize video heads and audio heads.
J-11	Dental Mirror (With handle) Dental Mirror (Mirror)	J-6080-029-A J-6080-030-1	SL-5052	Tape path and tape traveling adjustments or checks.
J-12	FLOIL SG-055G	7-651-000-09		
J-13	Diamond Oil NT-68	7-661-018-18		
J-14	Screw Lock G (1401B)	7-432-114-11		

J-1		J-2		J-3		J-4	
J-5		J-6		J-7		J-8	
J-9		J-10		J-11		J-12	
J-13		J-14					

3. MAINLY MECHANICAL PARTS REPLACEMENT

Notes:

- Refer to the service manual, "DISASSEMBLY" for removal of the cabinet and boards.
- On mounting, while referring to notes on mounting perform reversely in the removal order.
- When replacing greased parts, grease them in the same way.
- Do not oil, grease or touch with bare hands the surfaces contacts tape of guides and brake shoes.
- Install gears to engage each other.
- Basically, disassembling and assembling should be done in the unthreading-end condition.

3-1. FL BLOCK ASSEMBLY (Fig. 3-1)

- 1) Remove screws ①.
- 2) Remove FL block assembly ② in the arrow A direction.

Note: Be careful not to damage claws on the bottom and front.

[Note on Mounting]

- First insert claws on the bottom and front not to damage.
- Engage FL slide plate to FL driving gear with slightly sliding FL slide plate. (Fig. A)
- Keep clean top sensor and end sensor luminous plates. (Refer to 1-3.)

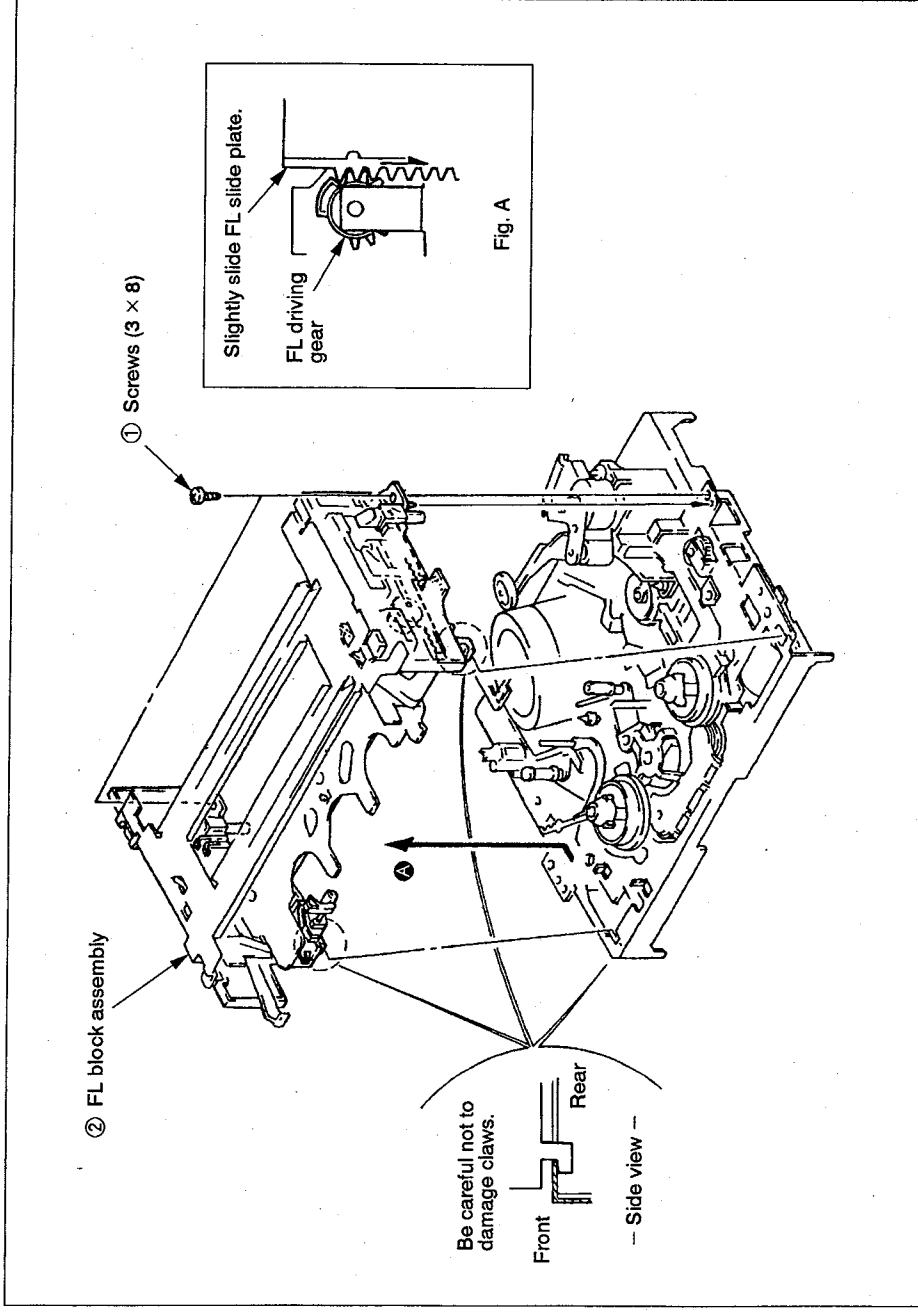


Fig. 3-1

3-2. DRUM ASSEMBLY (Fig. 3-2)

- 1) Remove screw ①.
- 2) Remove ground shaft assembly ② not to touch its tip with bare hand or tools.
- 3) Remove screws ③ to remove drum assembly ④.

[Note on Mounting]

- Don't touch head chips ⑤ and ground shaft assembly ④ with bare hand or tools.
- Keep clean the surface contacts tape of drum assembly ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

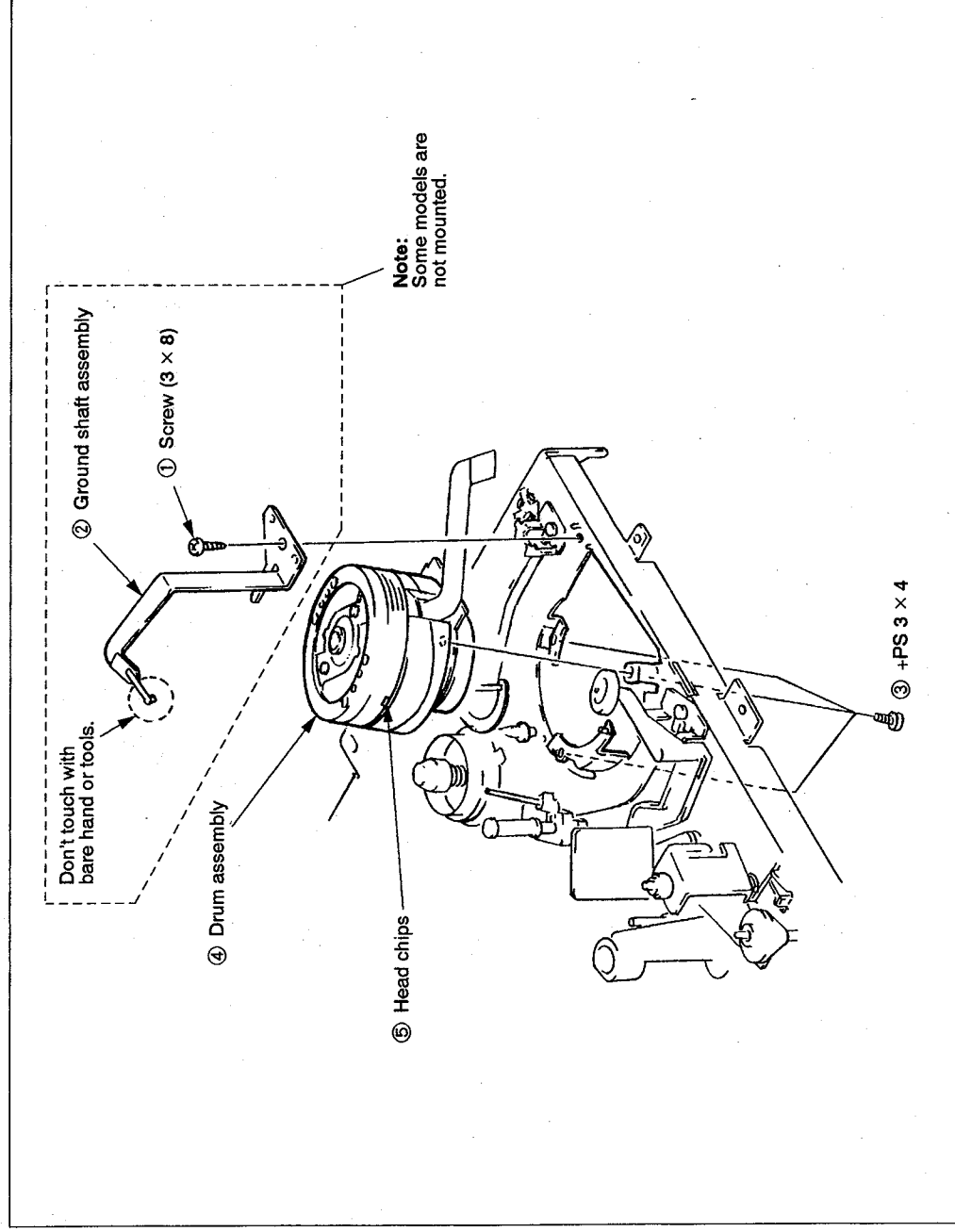


Fig. 3-2

3-3. TIMING BELT (Fig. 3-3)

- 1) Remove screw ① to remove tension vehicle arm assembly ②.
- 2) Remove timing belt ③.

[Note on Mounting]

- Tighten screw ① while pressing tension vehicle arm in the arrow ④ direction.

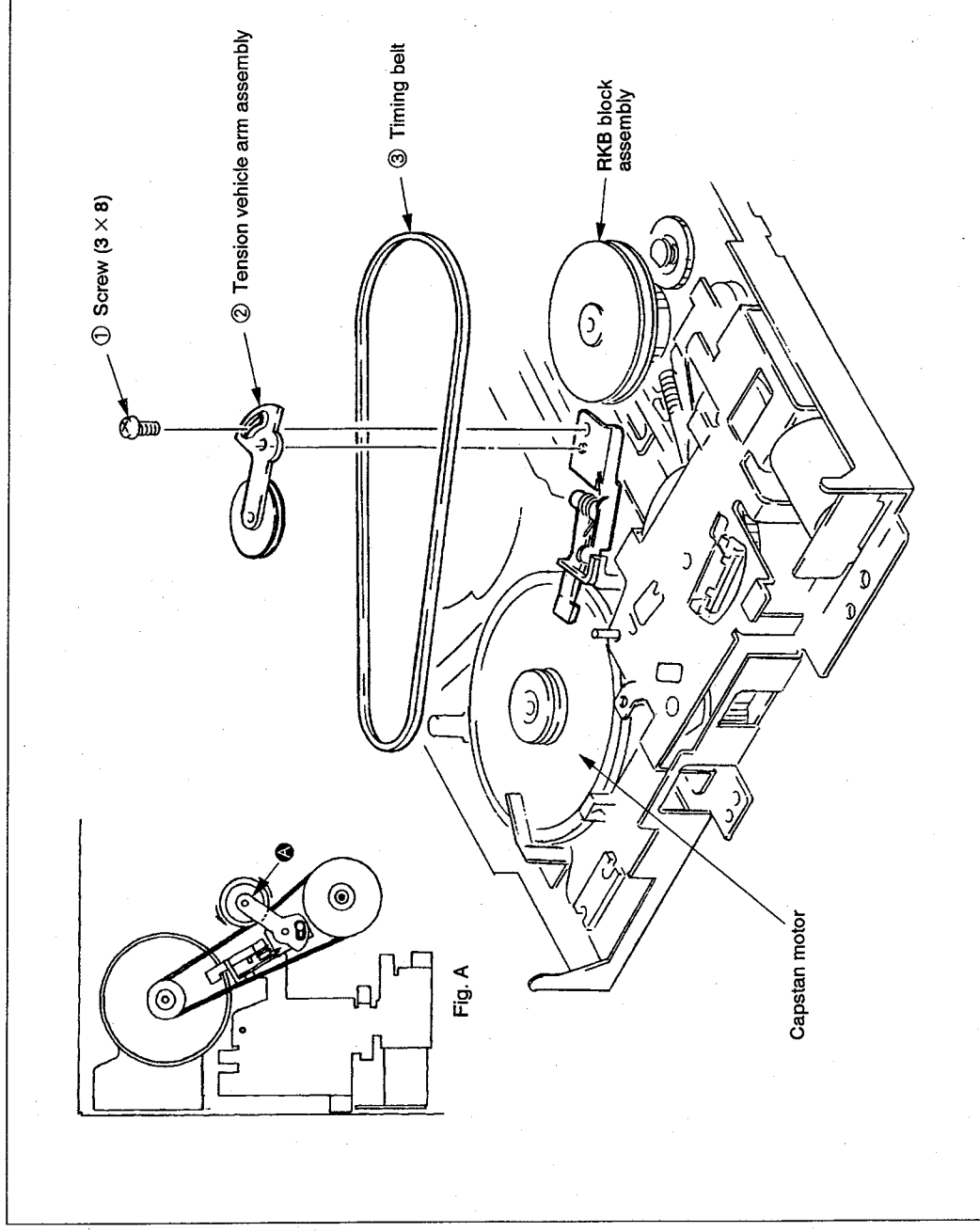


Fig. 3-3

3-4. CAP BRAKE ASSEMBLY (Fig. 3-4)

- 1) Remove tension vehicle arm assembly. (Refer to 3-3)
- 2) Remove torsion coil spring ① from portion ④ to remove CAP brake assembly.

[Note on Mounting]

- Mount torsion coil spring ① to CAP brake assembly ② in the order ④ and ⑤. (Fig. A)
- Put the fulcrum of CAP brake assembly ② to CAP brake shaft ③ and the tip of torsion coil spring to ⑥.
- Don't touch brake shoe ⑦ with bare hand.

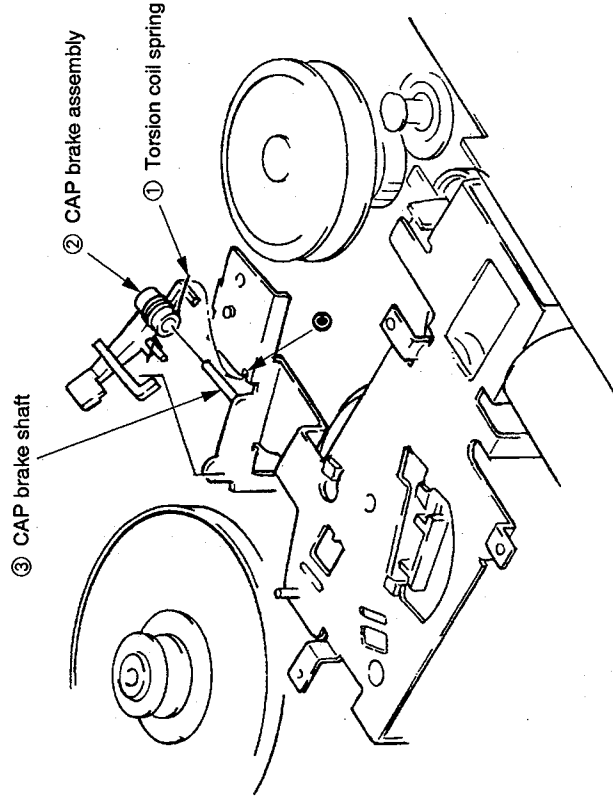
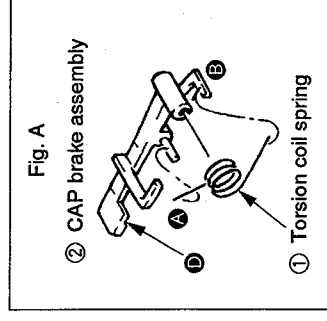


Fig. 3-4

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

- 1) Remove claw **A** to pull out TG2 roller ①.
- 2) Remove screw ② to pull out FE head assembly.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller ①.

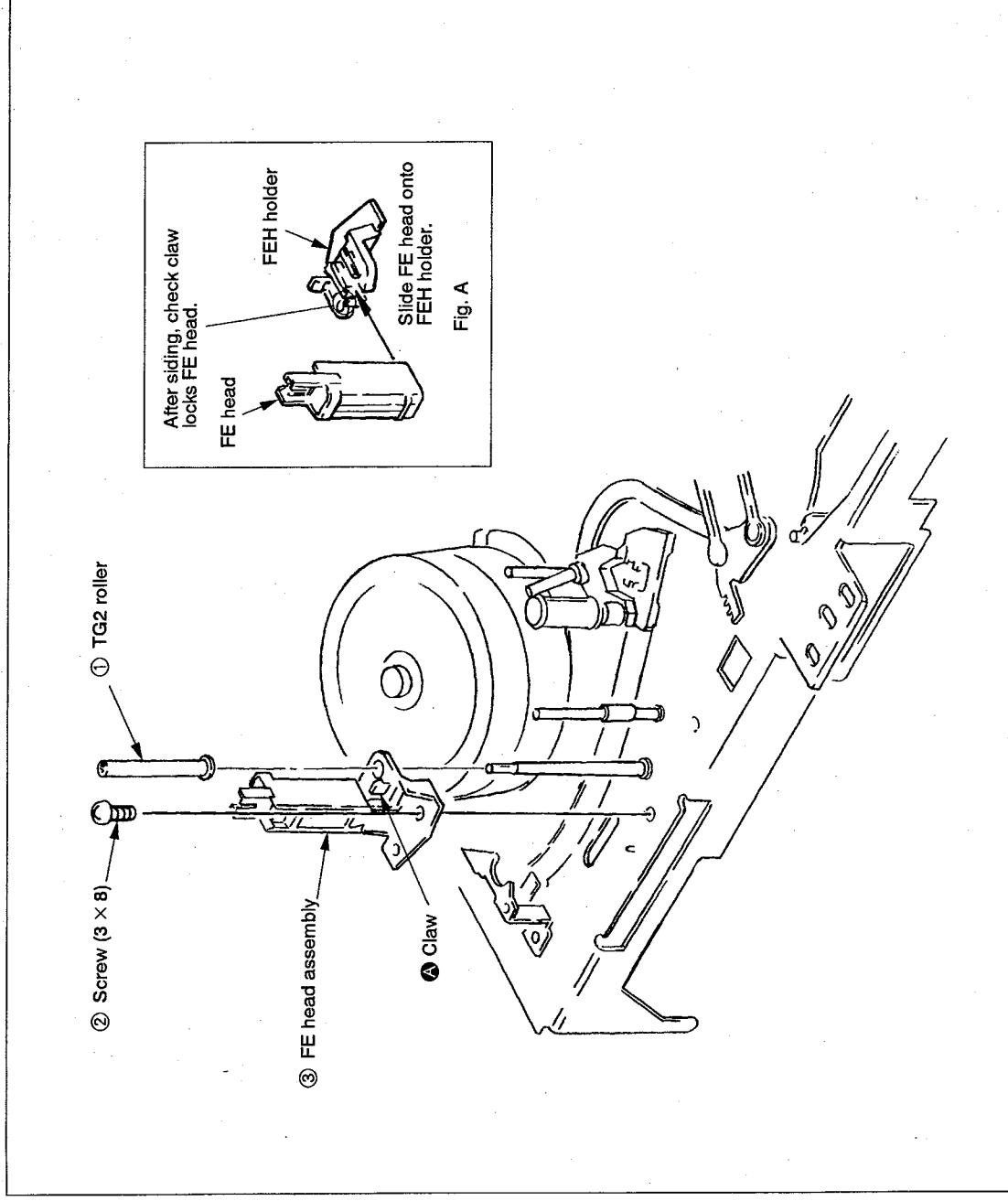


Fig. 3-5

3-6. PINCH PRESS BLOCK ASSEMBLY, ELEVATOR GEAR (Fig. 3-6)

- 1) Remove E ring ① to pull out pinch press block assembly ②.
- 2) Remove lid opener ③ by pressing claw A in the arrow B direction.
- 3) Pull out elevator gear ④.

[Note on Mounting]

- Apply grease FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.
- Be sure to match the phase ● between elevator gear ④ and press gear ⑤ on mounting elevator gear ④.

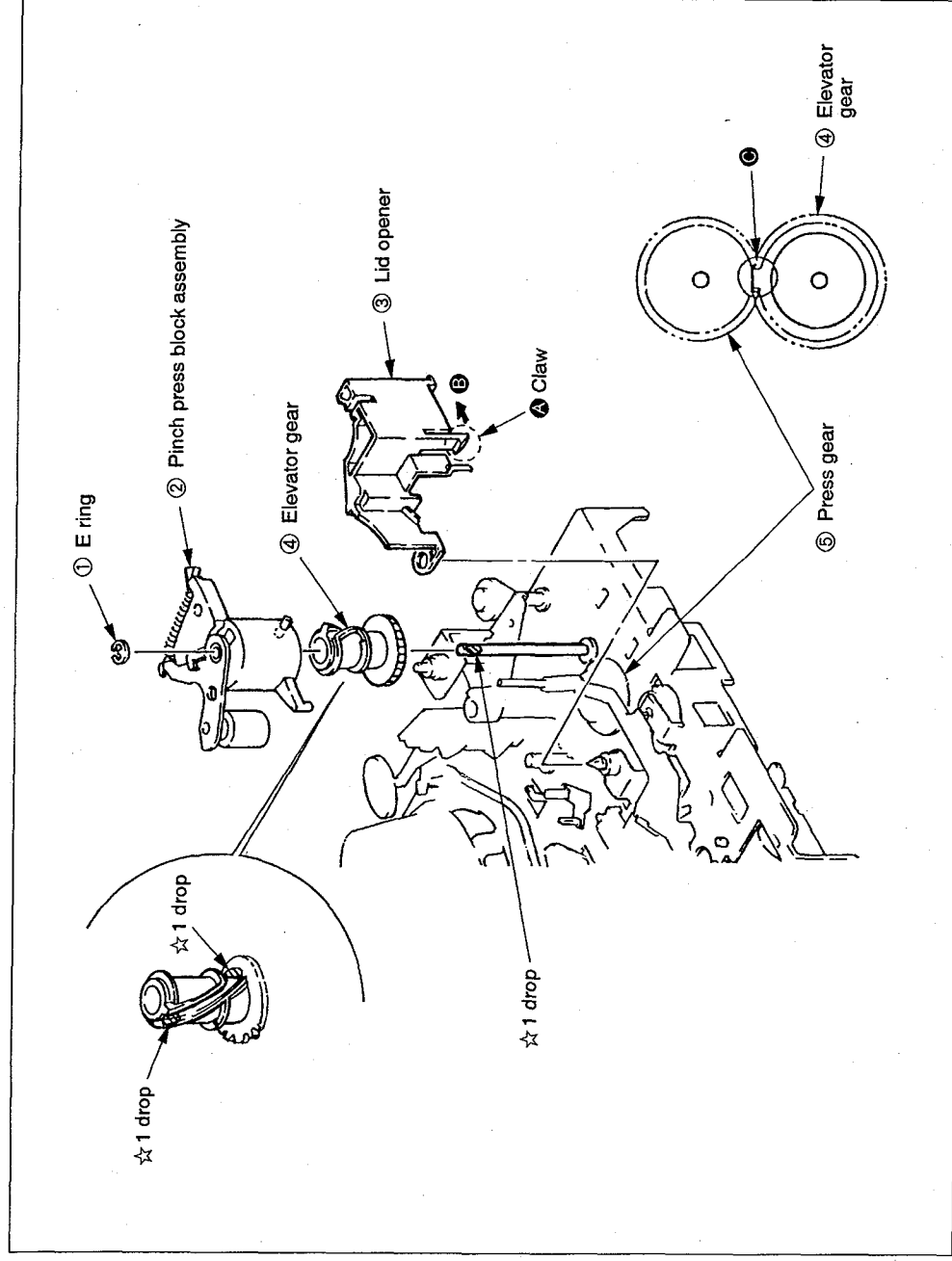


Fig. 3-6

3-7. ACE BLOCK ASSEMBLY (Fig. 3-7)

- 1) Move torsion coil spring (ACE) ① in the arrow **A** direction.
- 2) Remove ACE adjustment screw ②.
- 3) Remove AC height adjustment nut ③ to pull out ACE block assembly ④.

[Note on Mounting]

- Keep clean the surface contacts tape of ACE block assembly ④.
- Be sure to hang torsion coil spring (ACE) ① in the arrow **B** direction.
- Set ACE adjustment screw ② to the height as shown in Fig. A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.
- After adjustment apply Screw Lock G (1401B) (Jig Ref. No. J-14) at ☆ marked portion.

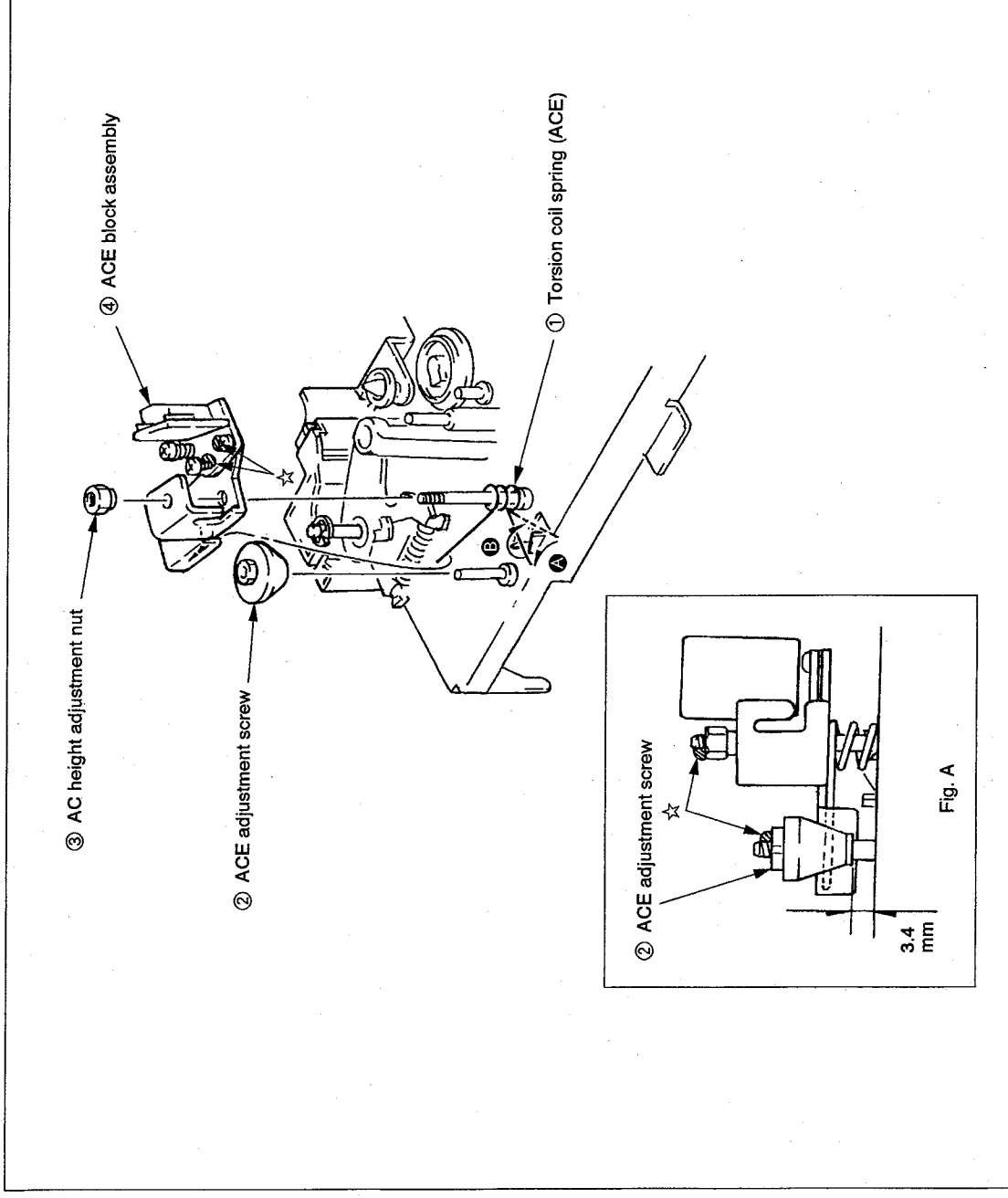


Fig. 3-7

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES

(Fig. 3-8)

- 1) Loosen screw ① and pull out TG3 guide roller assembly ② by turning it in the arrow **A** direction.
- 2) Loosen screw ③ and pull out TG6 guide roller assembly ④ by turning it in the arrow **B** direction.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ②, ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

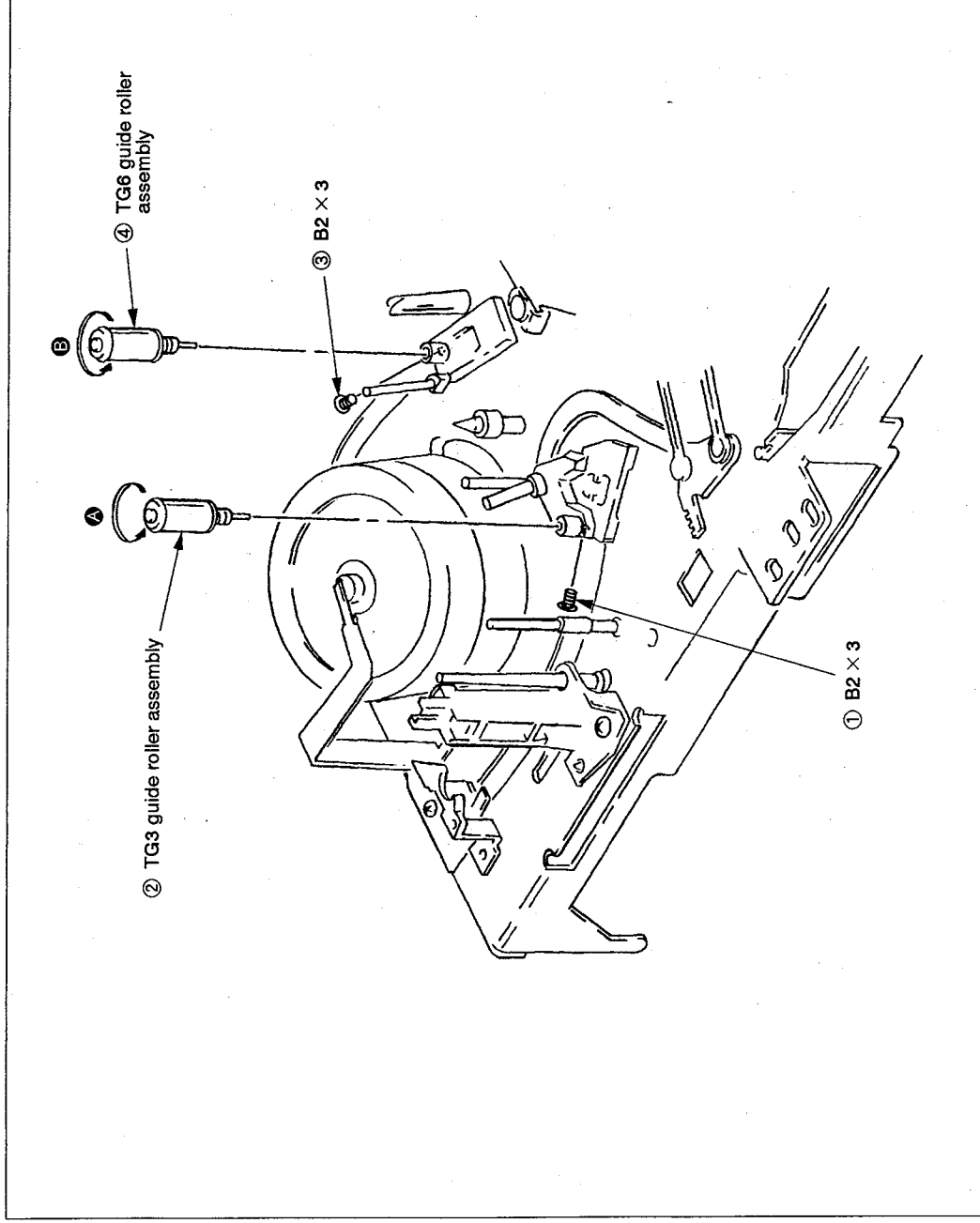


Fig. 3-8

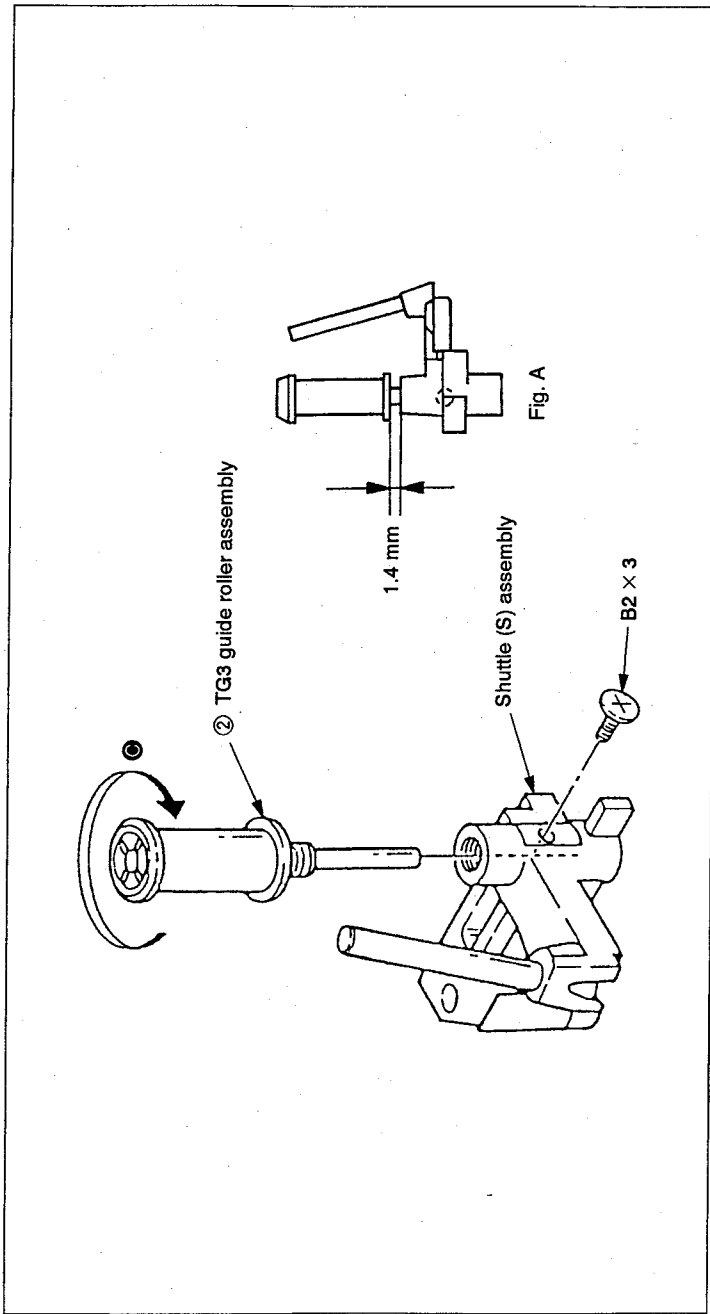


Fig. 3-9

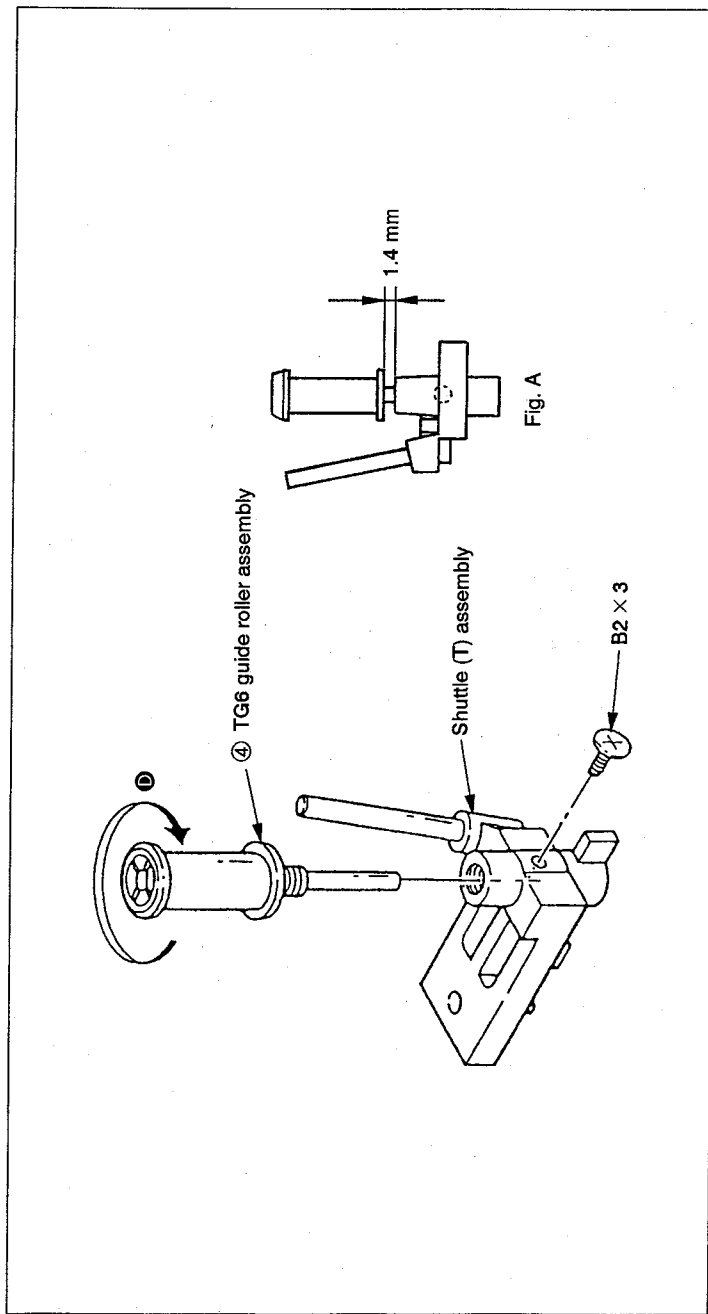


Fig. 3-10

3-9. CAPSTAN MOTOR (Fig. 3-11)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove screws ① to pull out capstan motor ②.

[Note on Mounting]

- Keep clean the surface contacts tape of capstan motor ②.
- On tightening screws ①, first tighten screw A temporarily, next tighten screws in the order B to C to A.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

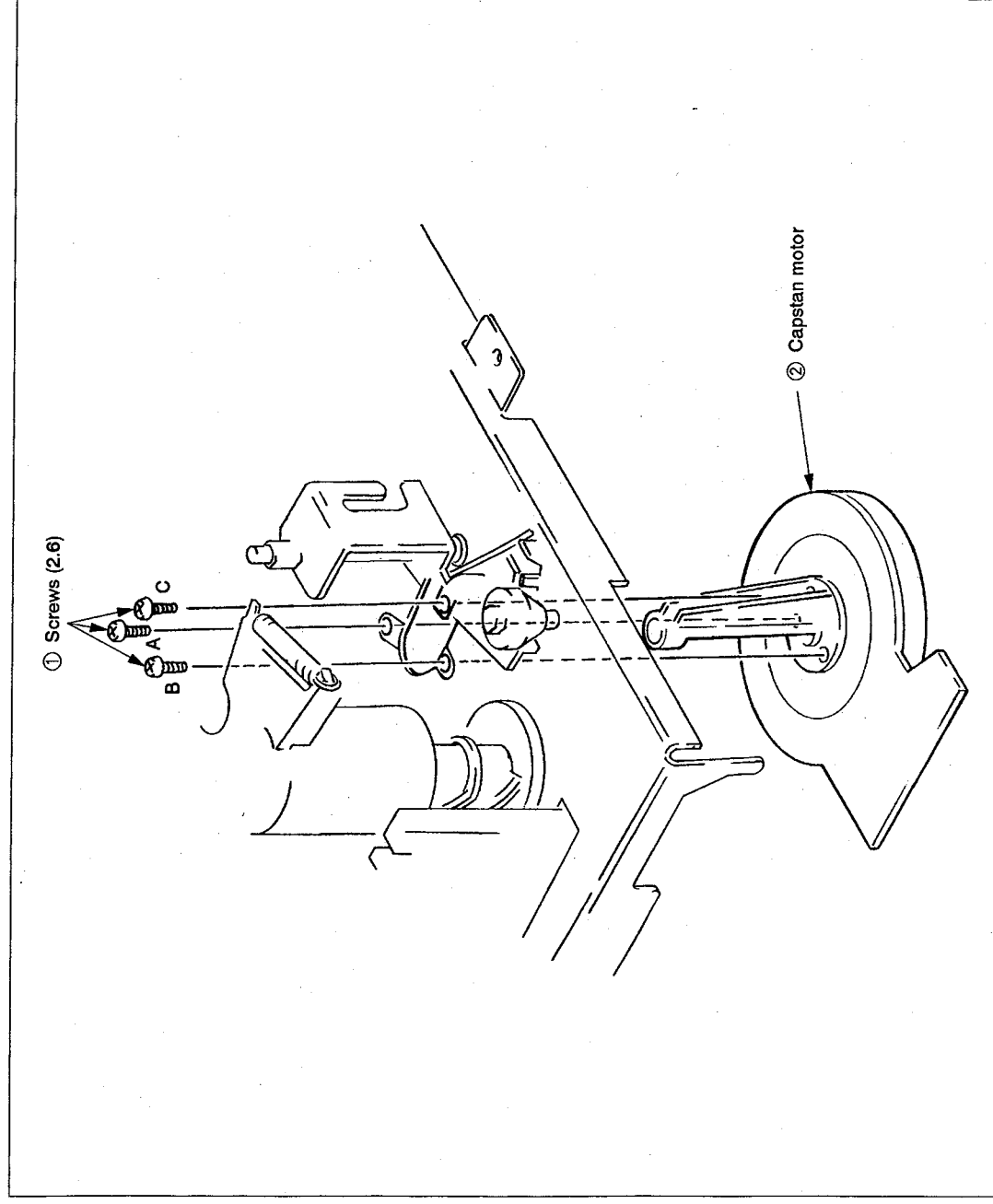


Fig. 3-11

3-10. MAIN BRAKE ASSEMBLIES S AND T (Fig. 3-12)

- 1) Remove tension spring ①.
- 2) Remove stopper washer (2) ② to remove neutrality arm ③.
- 3) Remove pendulum compulsion arm ④ and tension coil spring ⑤.
- 4) Remove stopper washer (2) ⑥ to remove main brake S assembly ⑦.
- 5) Remove stopper washer (2) ⑧ to remove main brake T assembly ⑨.

[Note on Mounting]

- Don't touch brake shoes **A** and **B** with bare hand.
- Apply FLOIL FG-055G (Jig Ref. No. J-12) to ☆ marked portions.

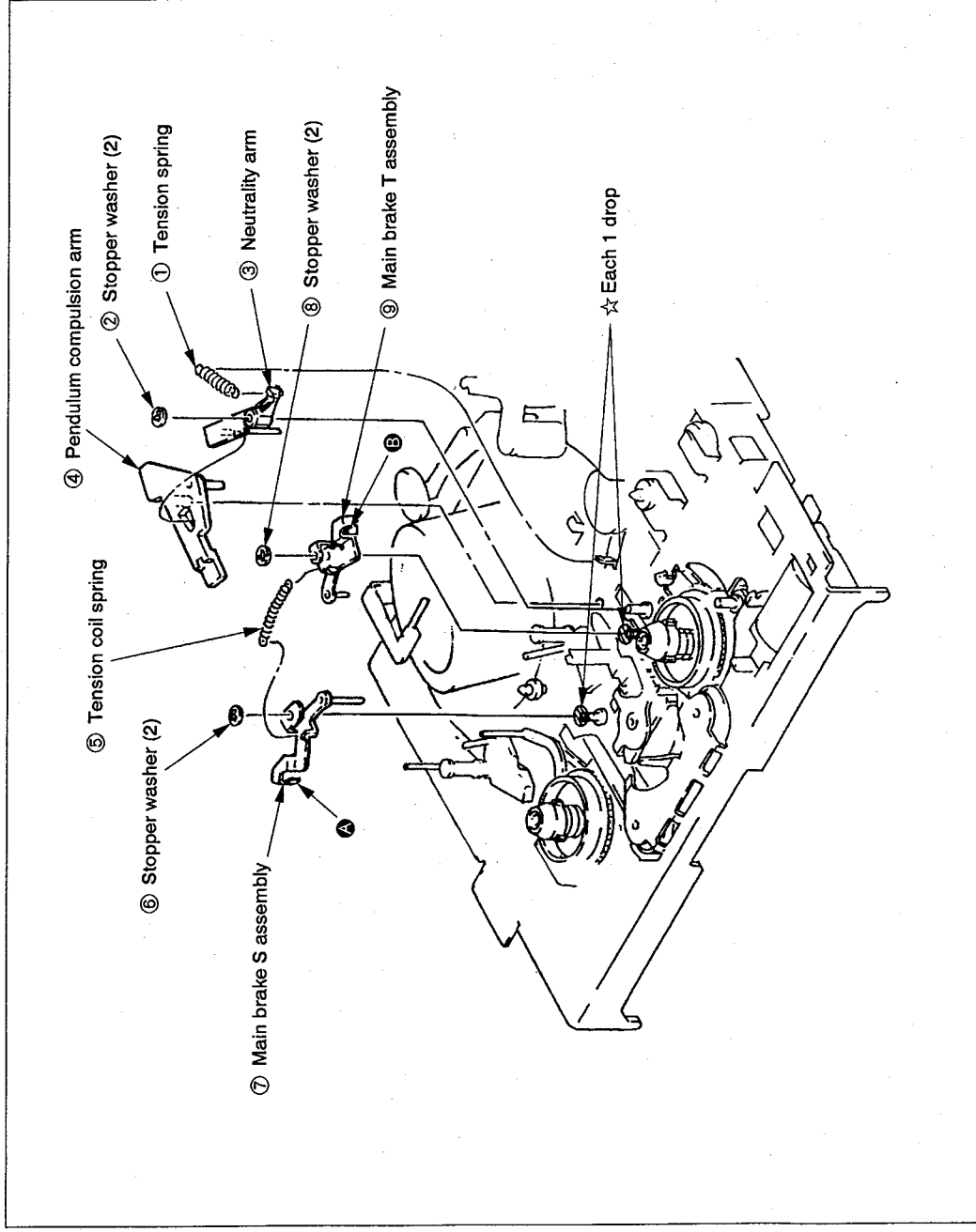


Fig. 3-12

3-11. SOFT BRAKE T ASSEMBLY (Fig. 3-13)

- 1) Remove pinch press block assembly. (Refer to 3-6.)
- 2) Remove lid opener ① carefully not to damage claw ④.
- 3) Remove tension spring ② from side ⑤ to pull out soft brake T assembly ③.

[Note on Mounting]

- Don't touch brake shoes ⑥ with bare hand.

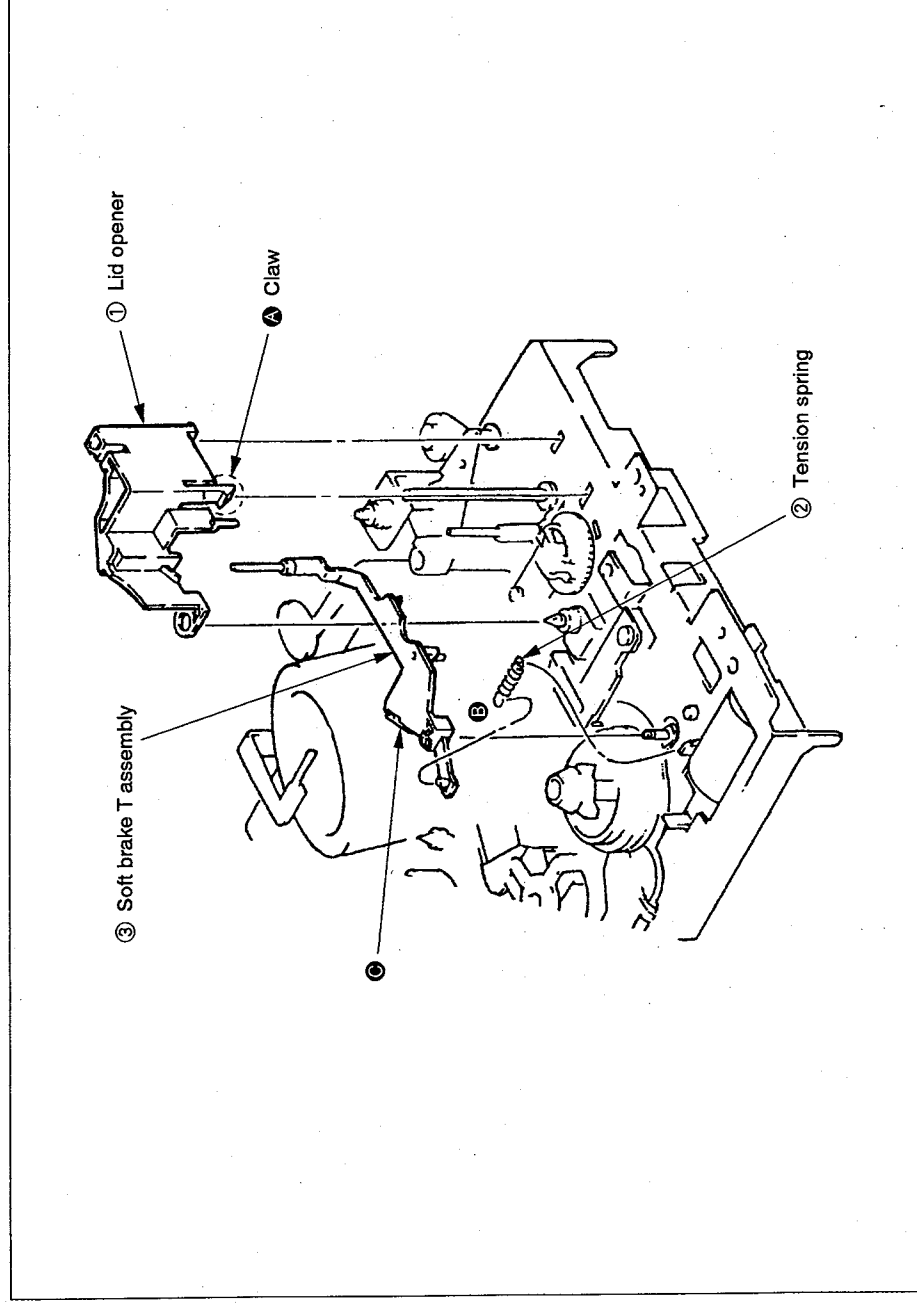


Fig. 3-13

3-12. RVS BRAKE ARM ASSEMBLY, REEL TABLE (T) ASSEMBLY (Fig. 3-14)

- 1) Remove main brake T assembly. (Refer to 3-10.)
- 2) Remove soft brake T assembly. (Refer to 3-11.)
- 3) Remove tension coil spring ① in the order A to B.
- 4) Remove RVS brake arm assembly ②.
- 5) Remove stopper washer (2) ③ to pull out reel table (T) assembly ④.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (T) assembly ④. (Fig. A)
- Don't touch the hatched portion on reel table (T) assembly ④ and brake shoe C of RVS brake arm assembly ② with bare hand.

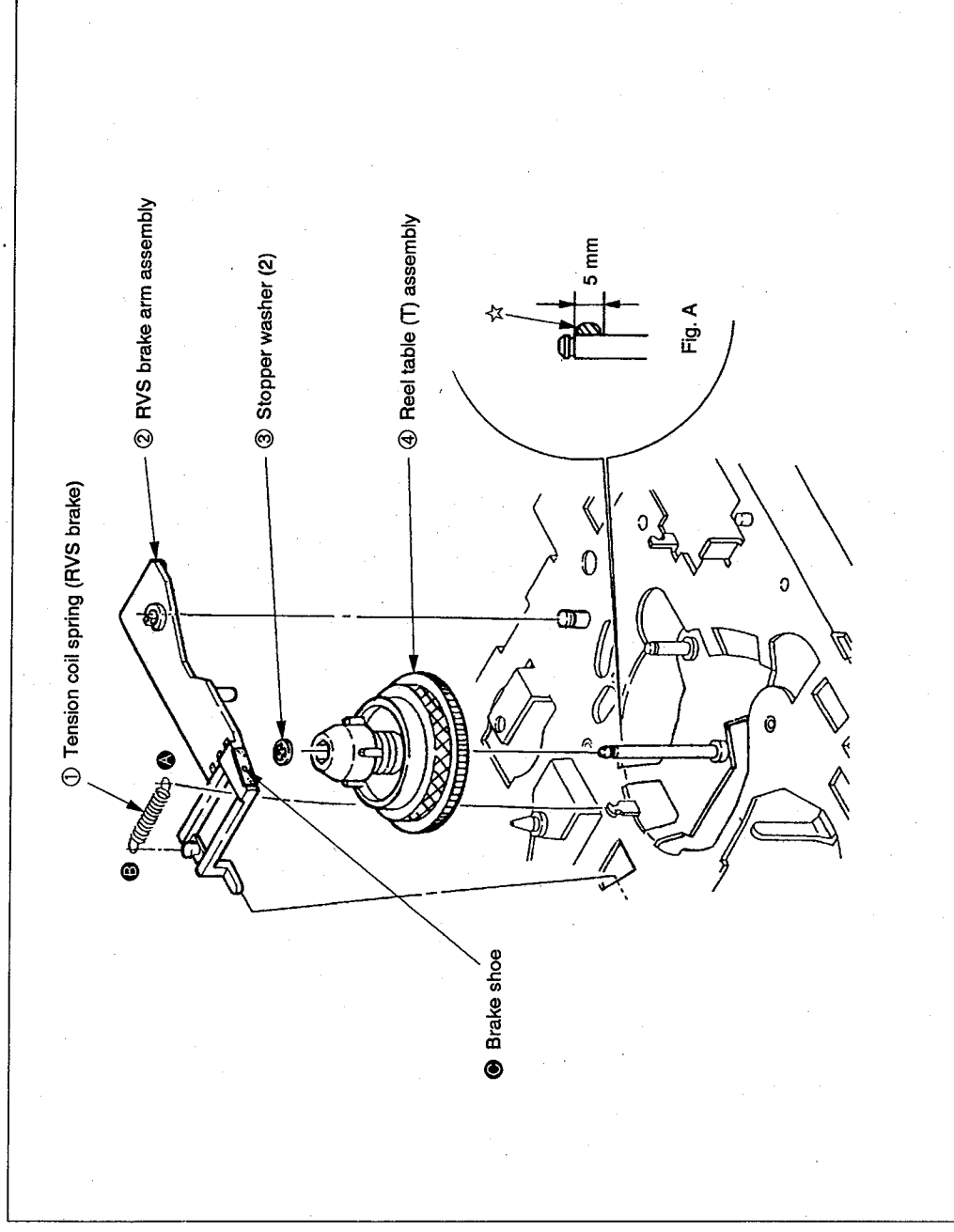


Fig. 3-14

3-13. TG8 ASSEMBLY (Fig. 3-15)

- 1) Remove TG8 retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG8 retainer ①.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

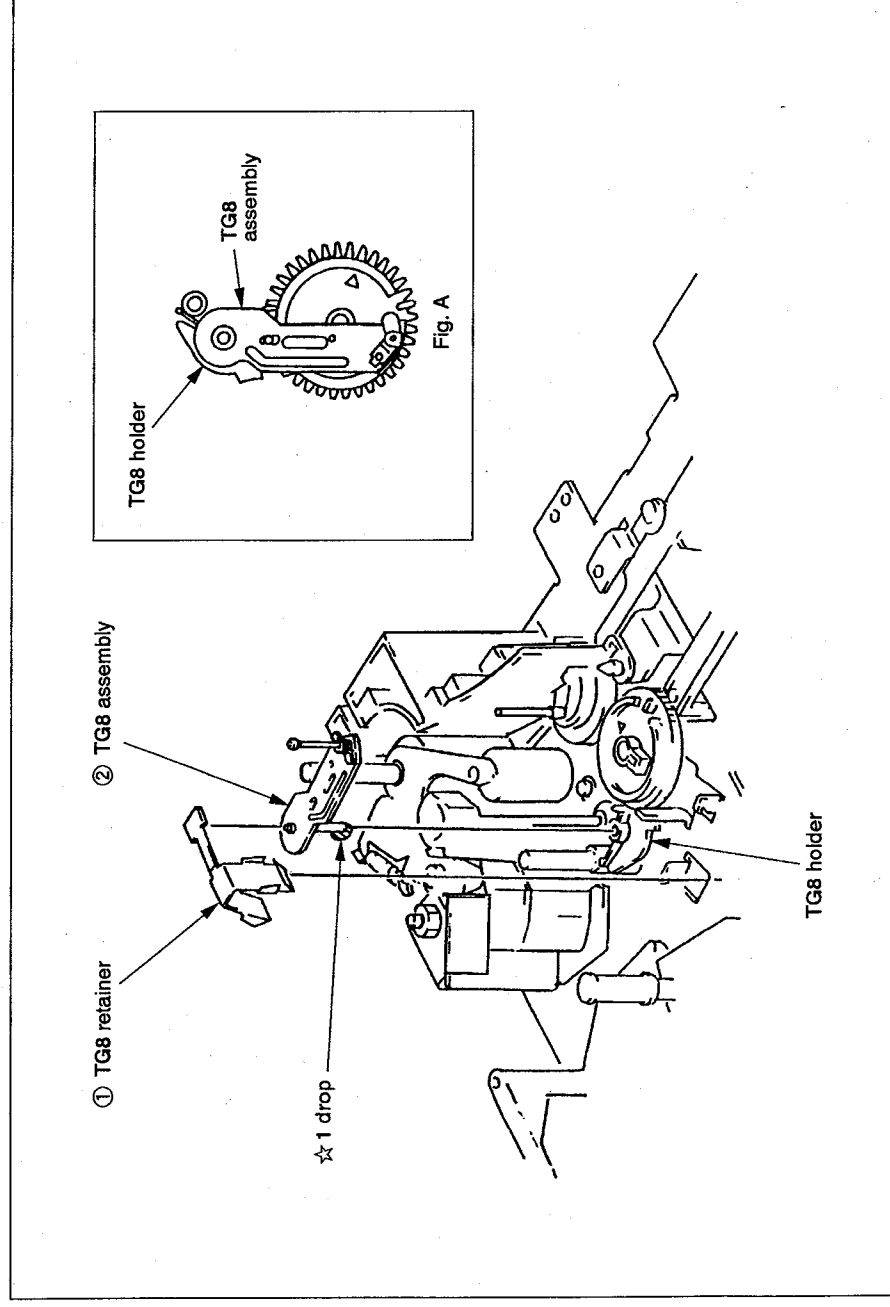


Fig. 3-15

3-14. TG8 HOLDER (Fig. 3-16)

- 1) Remove TG8 assembly. (Refer to 3-13)
- 2) Pull out TG8 holder ①.

[Note on Mounting]

- Be careful about the direction of TG8 holder ①. (▲ of Fig. A)

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

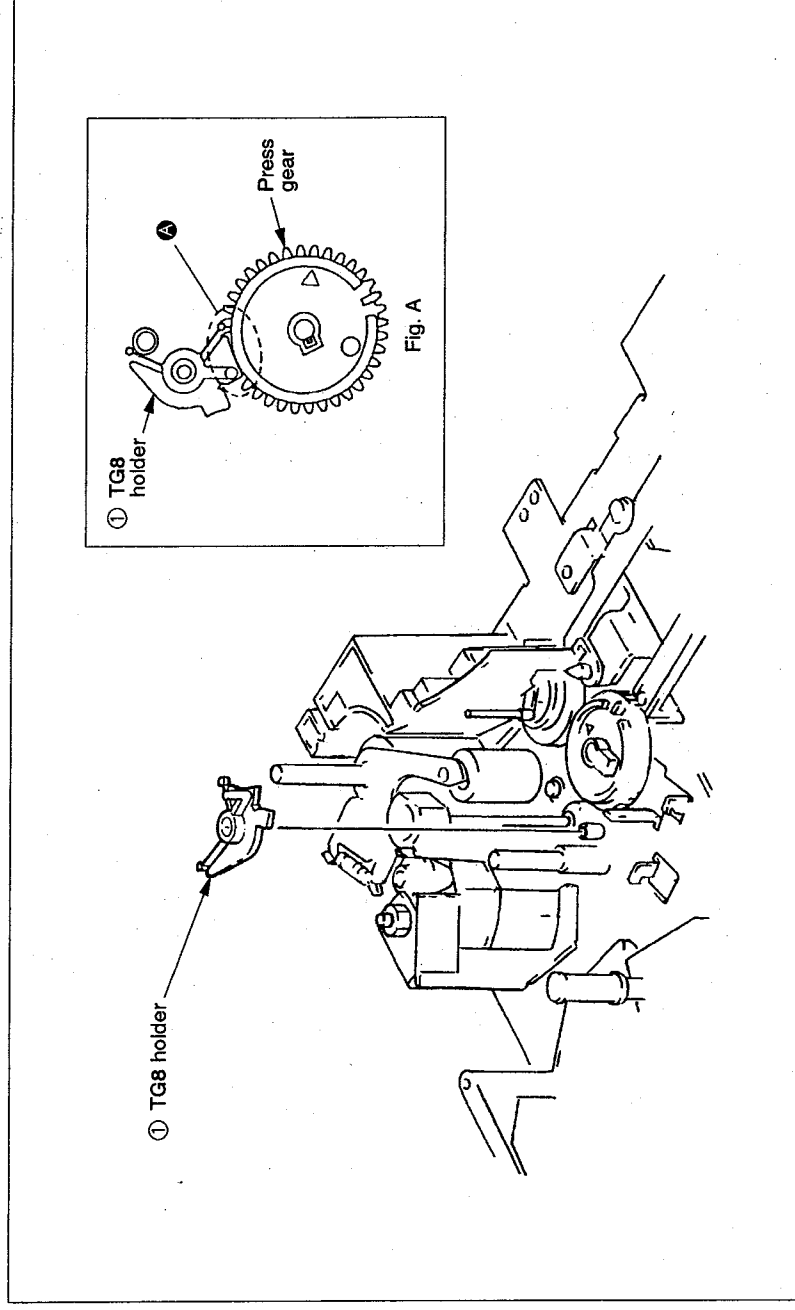


Fig. 3-16

3-15. TG8 AND PRESS GEARS (Fig. 3-17)

- 1) Remove pinch press block assembly. (Refer to 3-6.)
- 2) Remove soft brake T assembly. (Refer to 3-11.)
- 3) Remove TG8 assembly. (Refer to 3-13.)
- 4) Remove TG8 holder. (Refer to 3-14.)
- 5) Pull out TG8 gear ① or press gear ②.

[Note on Mounting]

- Adjust the holes on gears to the holes on chassis. (Fig. A)
- Adjust the arrows carved on gears each other. (Fig. A)

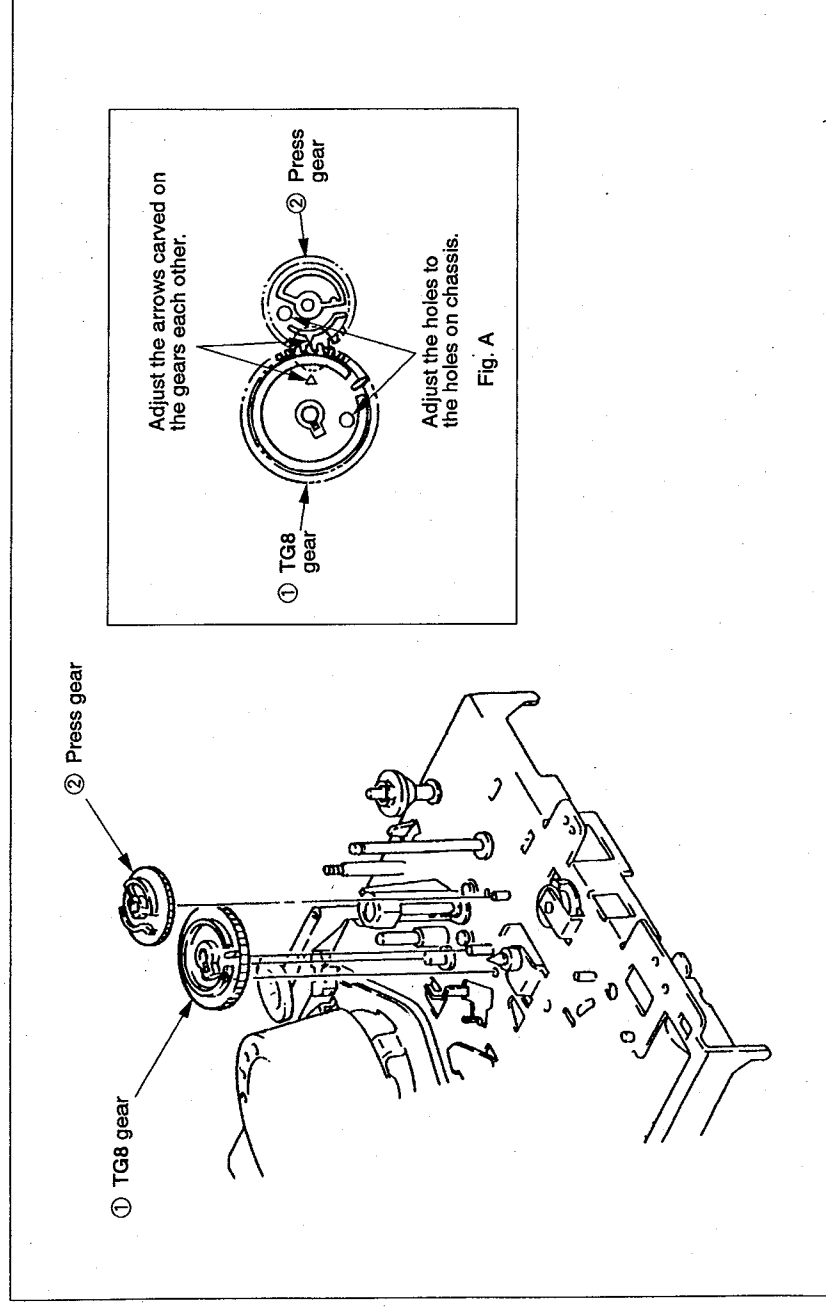


Fig. 3-17

3-16. CAM MOTOR CHASSIS BLOCK ASSEMBLY, UPPER/LOWER COMMUNICATION GEAR (Fig. 3-18)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove screws ① to remove cam motor chassis assembly ②.
- 4) Pull out upper/lower communication gear ③.

[Note on Mounting]

- First, check main slider ④ slides fully in the arrow **E** direction.
- Set rotary encoder switch position to "E" seen from the window of cam motor chassis. (Fig. A)
- Tighten screws ① in the order **A** to **B** to **C** to **D**.

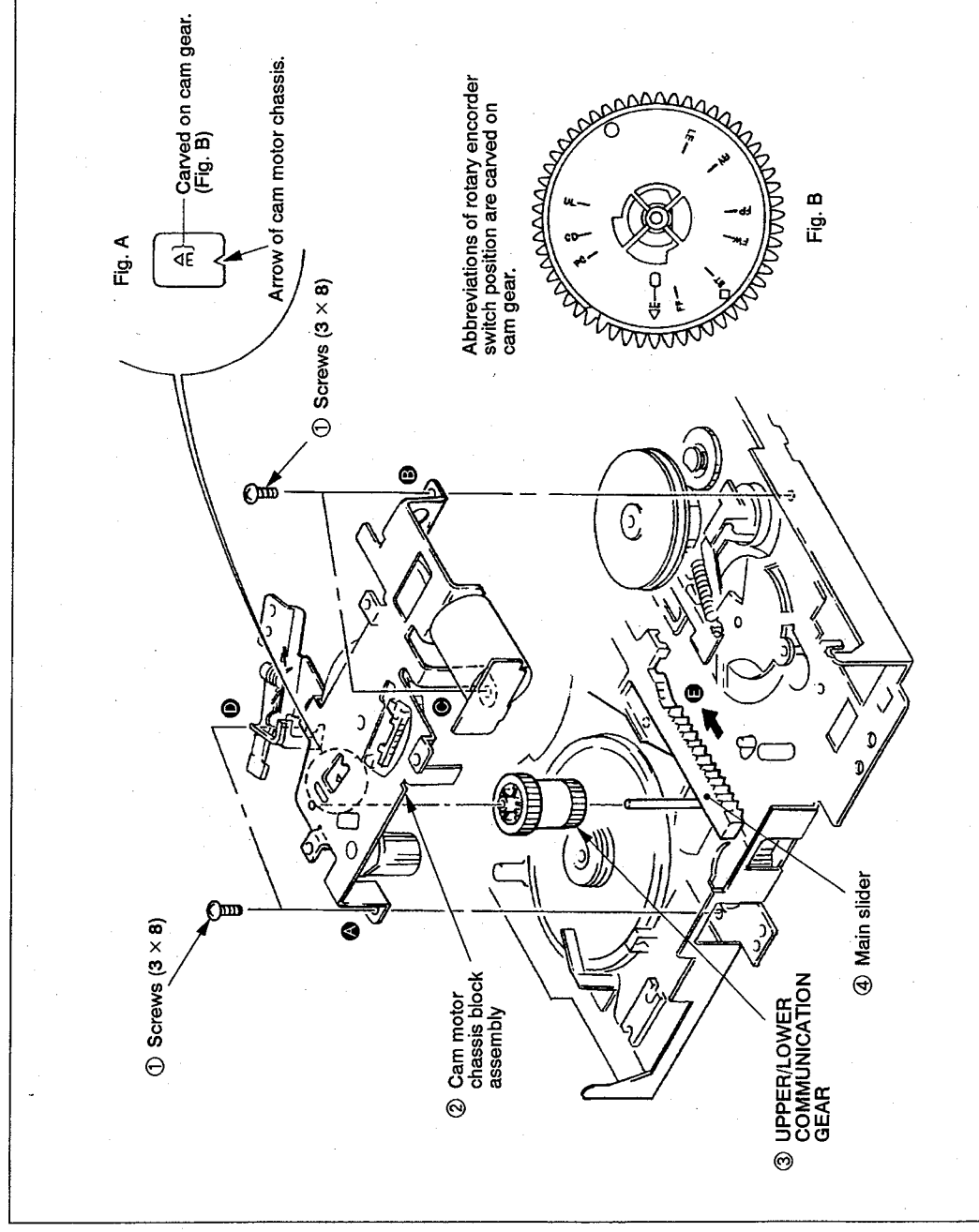


Fig. 3-18

3-17. ROTARY ENCODER SWITCH (Fig. 3-19)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly (Refer to 3-15.) and turn upside on the bottom.
- 4) Remove stopper washer (2) ① to pull out worm wheel ②.
- 5) Remove stopper washer (2) ③ to pull out cam gear ④.
- 6) Pull out FL driving gear ⑤ and rotary encoder switch ⑥.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions. (Fig. 3-19, A)
- Adjust the hole ① to the hole on cam motor chassis. (Fig. B)
- Adjust the holes ② and ③ to the hole on cam motor chassis. (Fig. C)

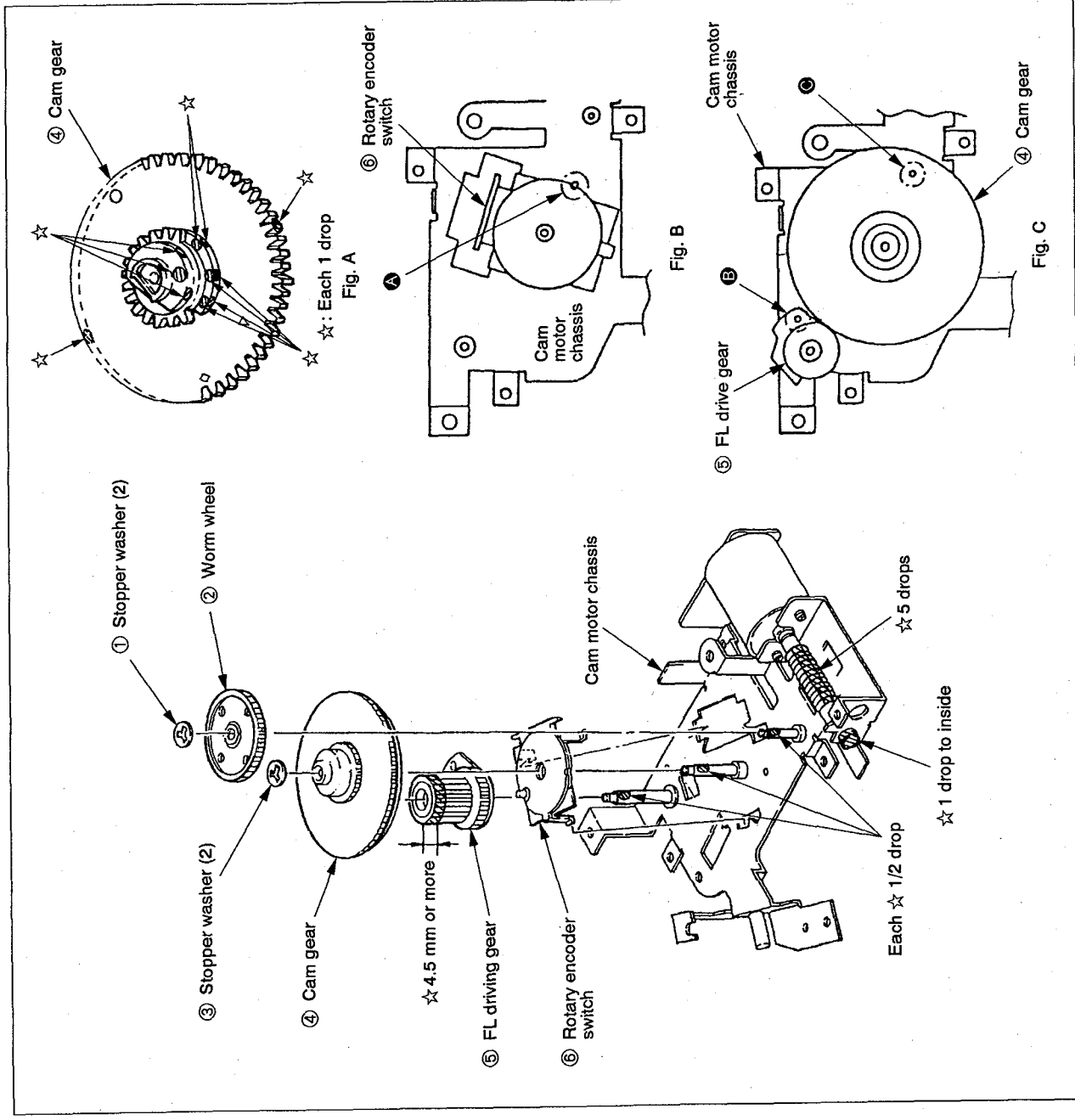


Fig. 3-19

3-18. MAIN SLIDER (Fig. 3-20)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove screw ① to remove retainer ②.
- 5) Pull out main slider ③.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) as shown in Fig. A.
- At the last, slide main slider fully in the arrow **A** direction.

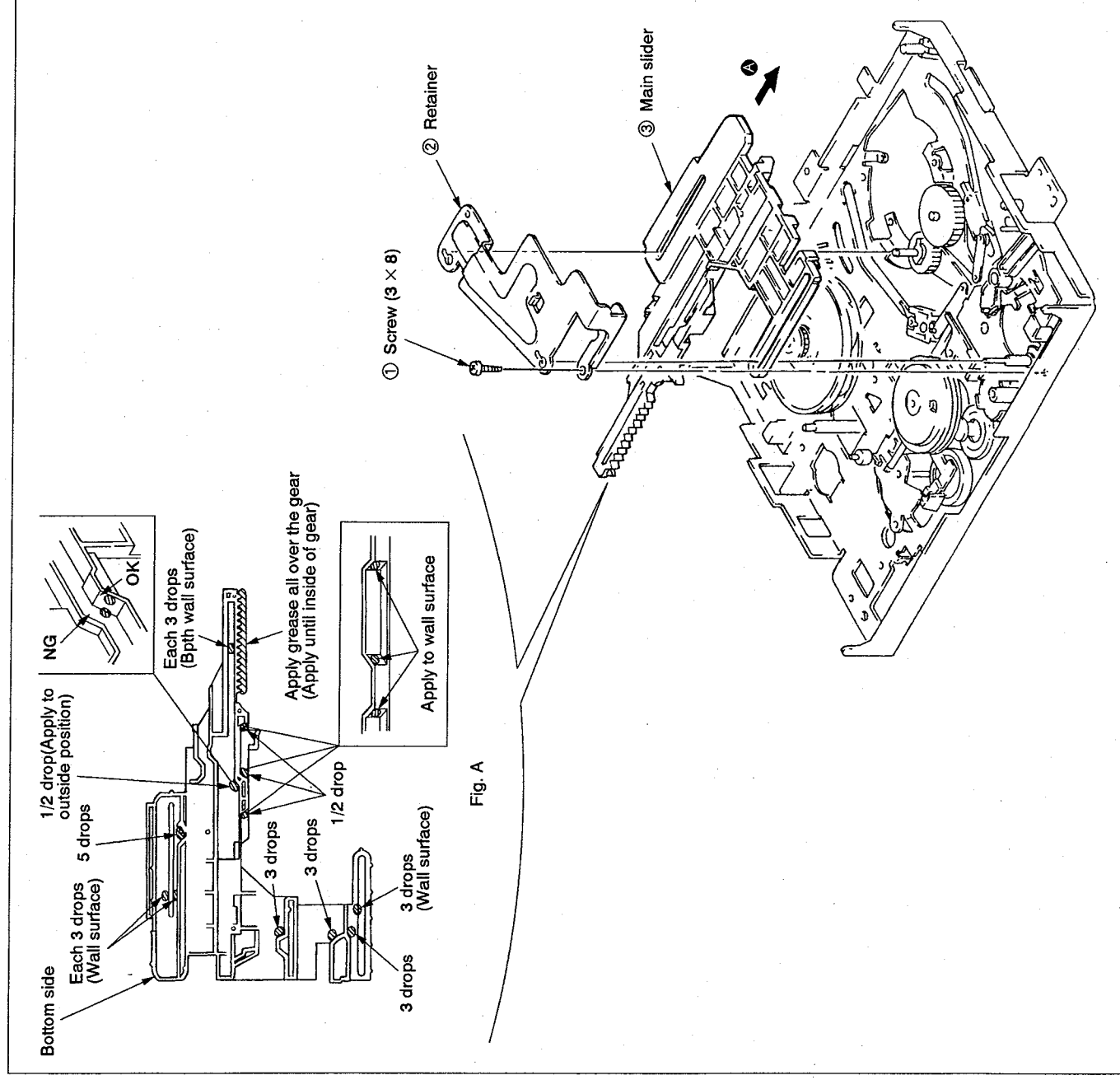


Fig. 3-20

3-19. SHUTTLE T BLOCK AND LOADING GEAR T BLOCK ASSEMBLIES (Fig. 3-21)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-18.)
- 5) Remove screw ① to remove loading leaf (T) spring ② and shuttle T block assembly ③.
- 6) Pull out loading gear T block assembly ④.

[Note on Mounting]

- Adjust the phase **A** between loading gear (T) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle T block assembly ③.

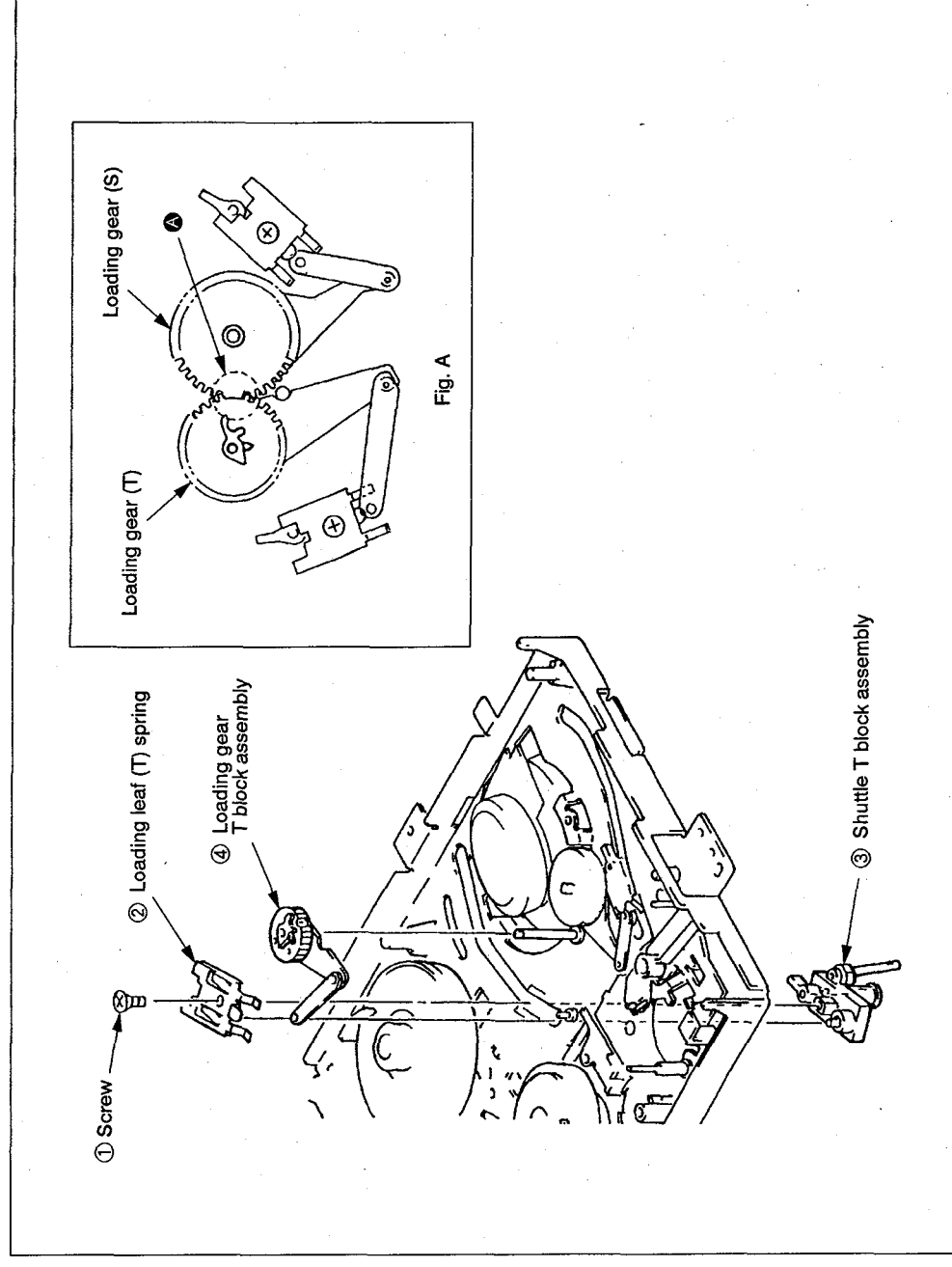


Fig. 3-21

3-20. SHUTTLE S BLOCK AND LOADING GEAR S BLOCK ASSEMBLIES (Fig. 3-22)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-15.)
- 5) Remove screw ① to remove loading leaf (S) spring ② and shuttle S block assembly ③.
- 6) Pull out loading gear S block assembly ④.

[Note on Mounting]

- Adjust the phase **A** between loading gear (S) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle S block assembly ③.

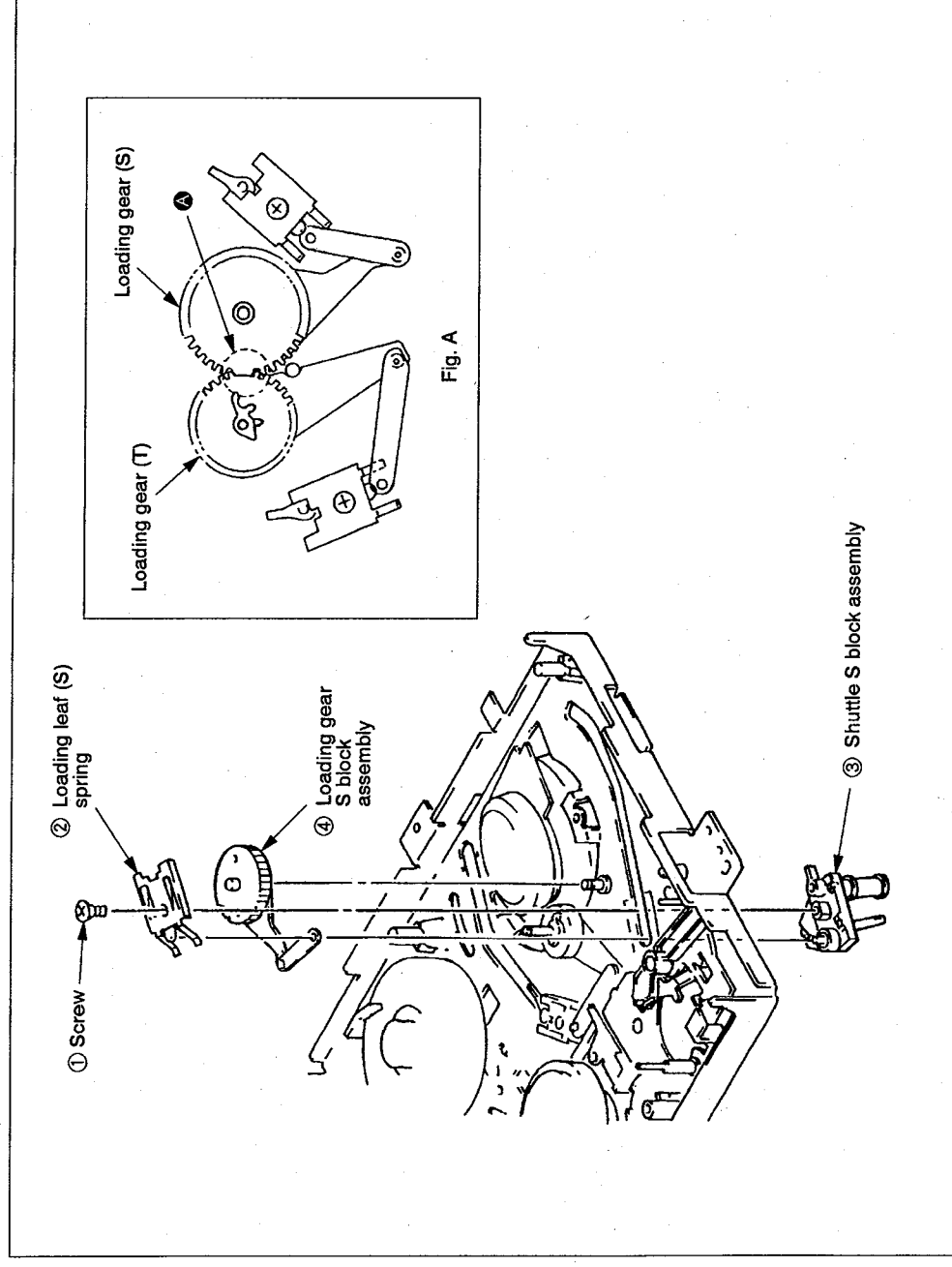


Fig. 3-22

3-21. REEL TABLE (S) ASSEMBLY (Fig. 3-23)

- 1) Remove tension spring ① from the chassis side.
- 2) Remove stopper washer (2) ② to pull out soft brake (S) ③.
- 3) Move TG1 band ④ over the reel table.
- 4) Remove stopper washer (2) ⑤.
- 5) While pressing main brake S assembly ⑥, pull out reel table (S) assembly ⑦.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion before mounting reel table (S) assembly ⑥. (Fig. A)
- Don't touch the hatched portion on reel table (S) assembly ⑥ with bare hand.

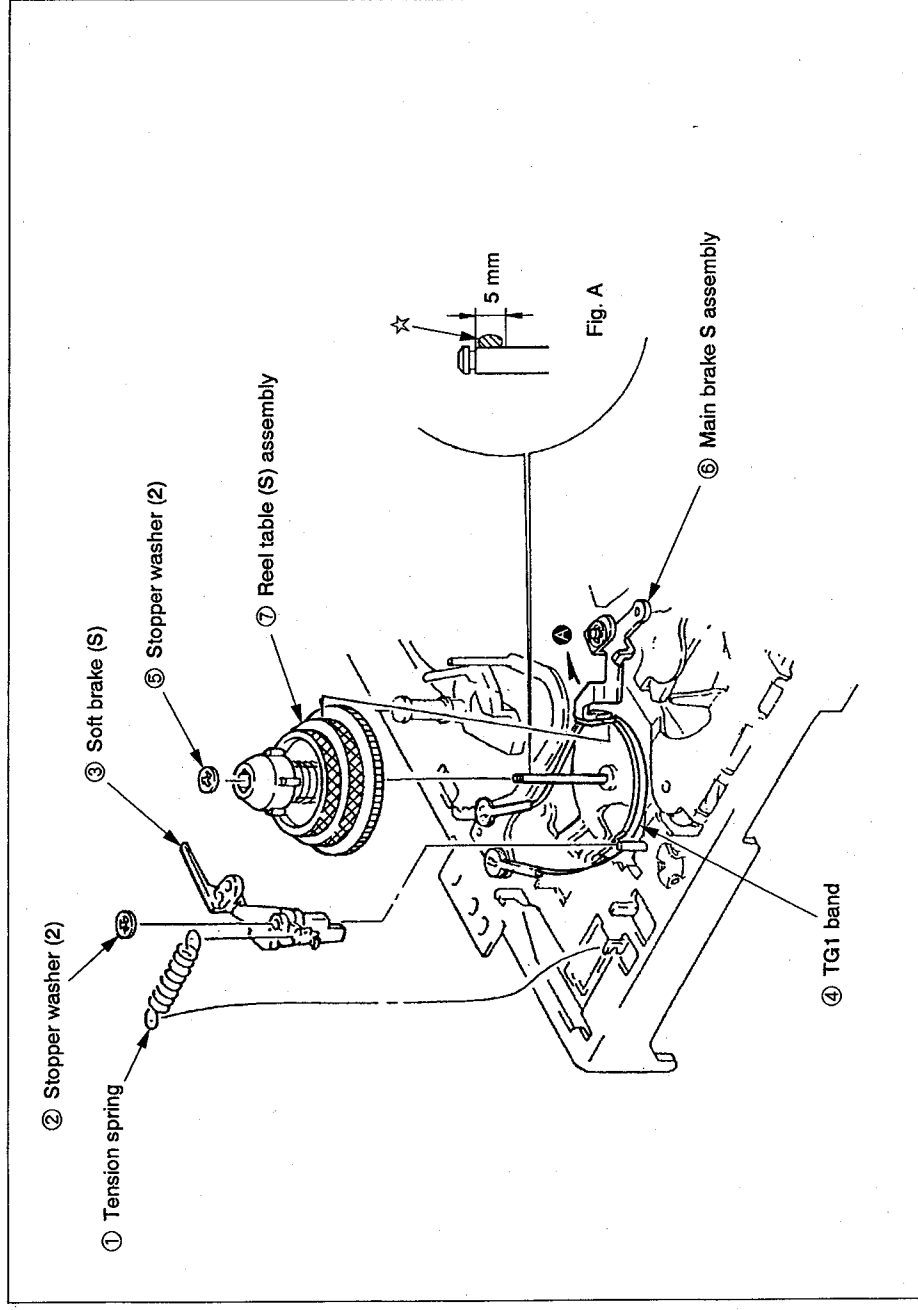


Fig. 3-23

3-22. TG1 ASSEMBLY (Fig. 3-24)

- 1) Set the mechanism to the loading-end condition referring to 1-1. (Cam gear indicates "LE". (Refer to Fig. A and B of Fig. 3-18.))
- 2) Remove tension spring ① in the order A to E.
- 3) Remove stopper washer (2) ② to pull out TG1 assembly ③.

[Note on Mounting]

- Apply one drop of Diamond Oil NT-68 (Jig Ref. No. J-13) to ☆ marked portion.
- Keep clean the felt side of TG1 assembly.

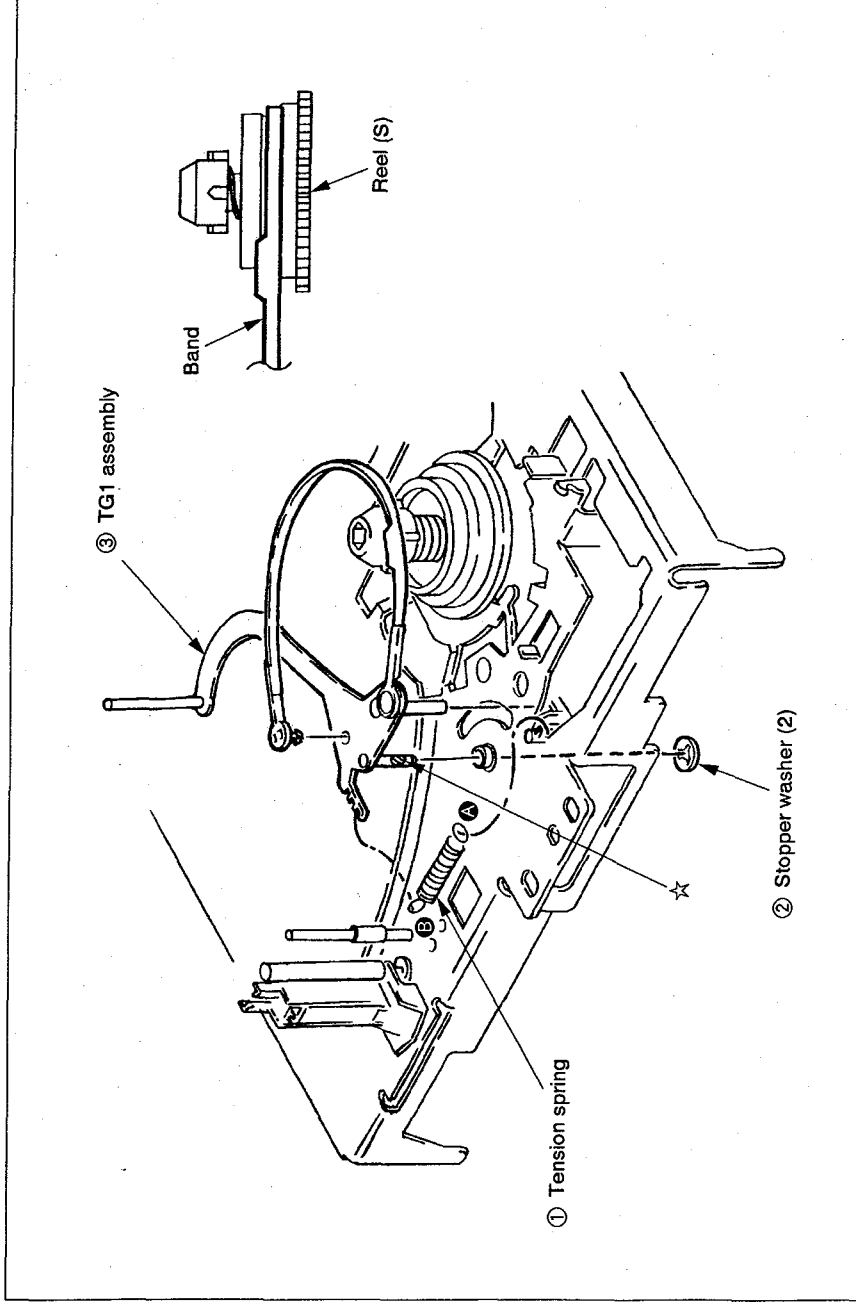


Fig. 3-24

3-23. S WINDING BLOCK ASSEMBLY (Fig. 3-25)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-18.)
- 5) Remove stopper washer (2) ① to pull out S winding block assembly ②.
- 6) Remove torsion spring ③.

[Note on Mounting]

- At the last, hang torsion spring ② to the position **A**.
- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions.

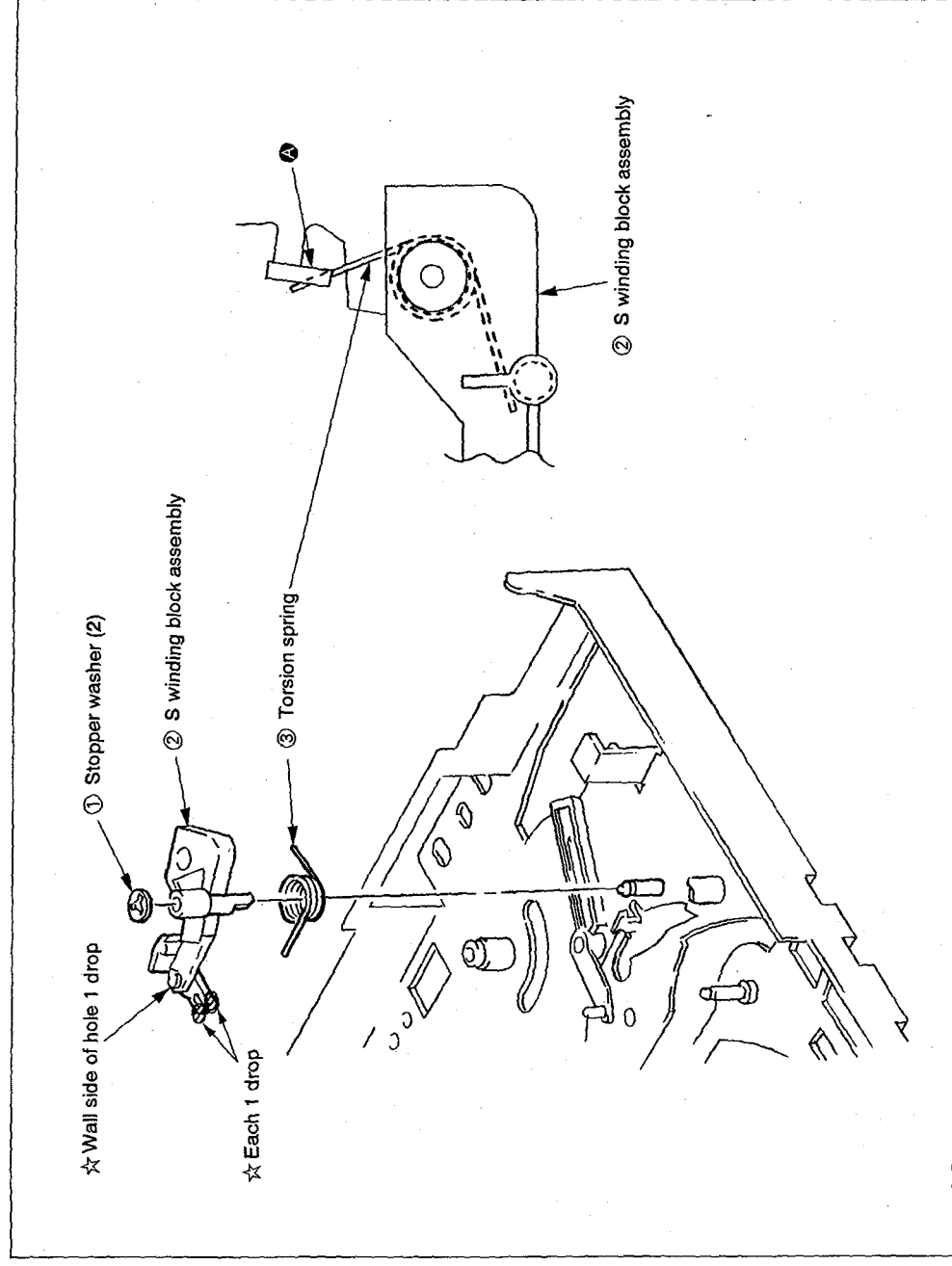


Fig. 3-25

3-24. TRIGGER LEVER AND RKB BLOCK ASSEMBLIES (Fig. 3-26)

- 1) Remove timing belt. (Refer to 3-3.)
- 2) Remove CAP brake assembly. (Refer to 3-4.)
- 3) Remove cam motor chassis block assembly. (Refer to 3-16.)
- 4) Remove main slider. (Refer to 3-18.)
- 5) Remove tension spring ① in the order A to B to remove trigger lever assembly ②.
- 6) Remove screws (3 × 8) ③ to remove RKB block assembly ④.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portions on trigger lever assembly. (Fig. A)

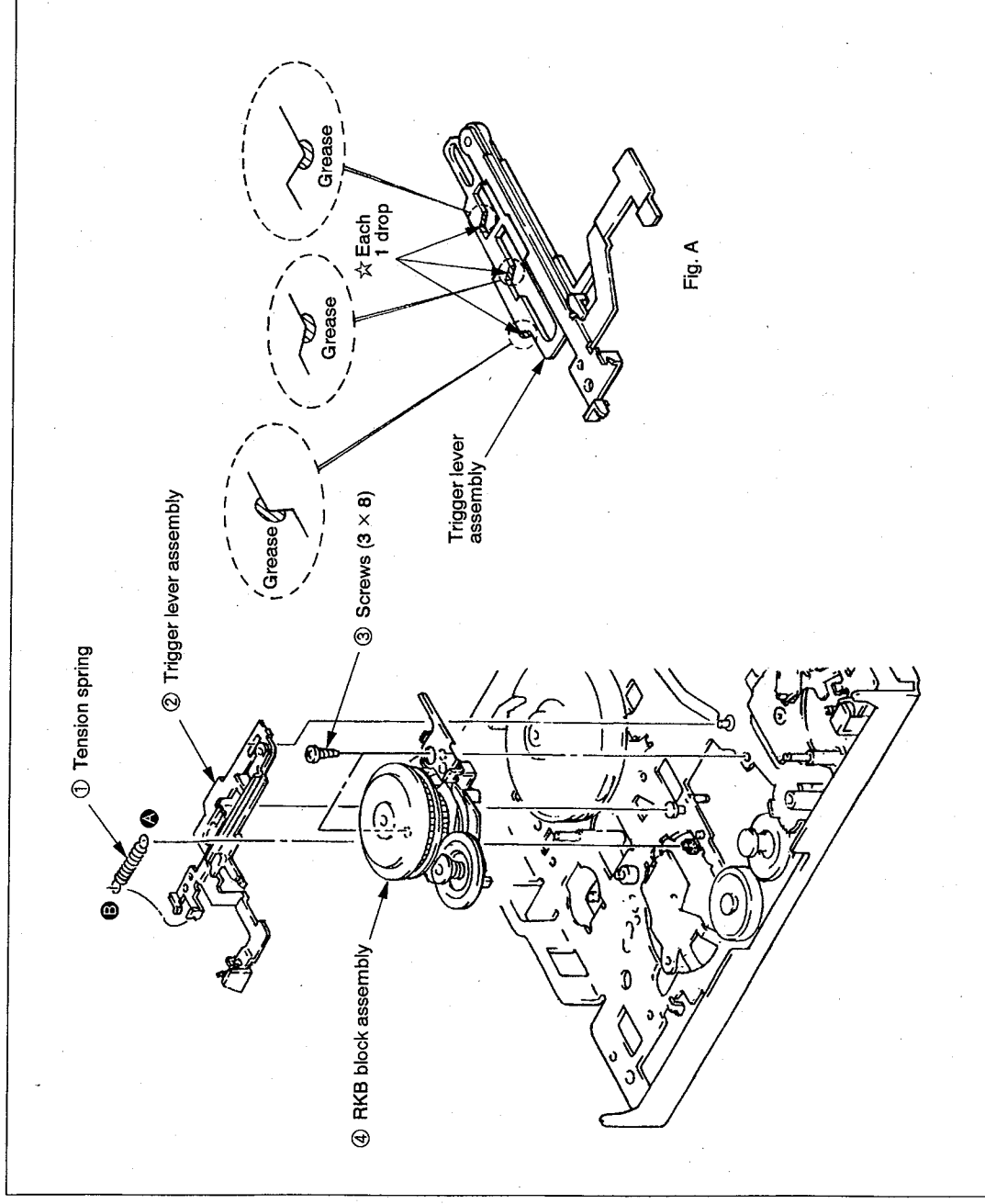


Fig. 3-26

4. ADJUSTMENT

4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads.

Each component part of the tape transport system particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted, when parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

4-1-1. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Fig. 4-1)

Purpose: stabilizes contact of the video head and the tape to maintain the tension of the tape so that it feeds at a constant level.

• Position adjustment

Mode	Treading is completed without a cassette loaded
Adjustment locations	Eccentric pin of TG1 band assembly

[Adjustment Method]

- 1) Allow the unit to go through the threading procedure without a cassette loaded.

- 2) Set the unit to play back, then turn the eccentric pin so that the tip of tension arm goes to the left side line carved on the mechanical chassis. (Fig. A)
- 3) After adjustment, go through the loading procedure once more without a cassette loaded, then check the position of the tension arm.

• Tension adjustment

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specified value	36 to 44 g·cm

[Adjustment Method]

- 1) Playback the torque cassette.
- 2) Check that the center value deviation reading on the torque cassette meets with the standards.
- 3) When the reading is higher than the standards: Move the spring toward direction **A**.
When the reading is less than the standards: Move the spring toward direction **B**.

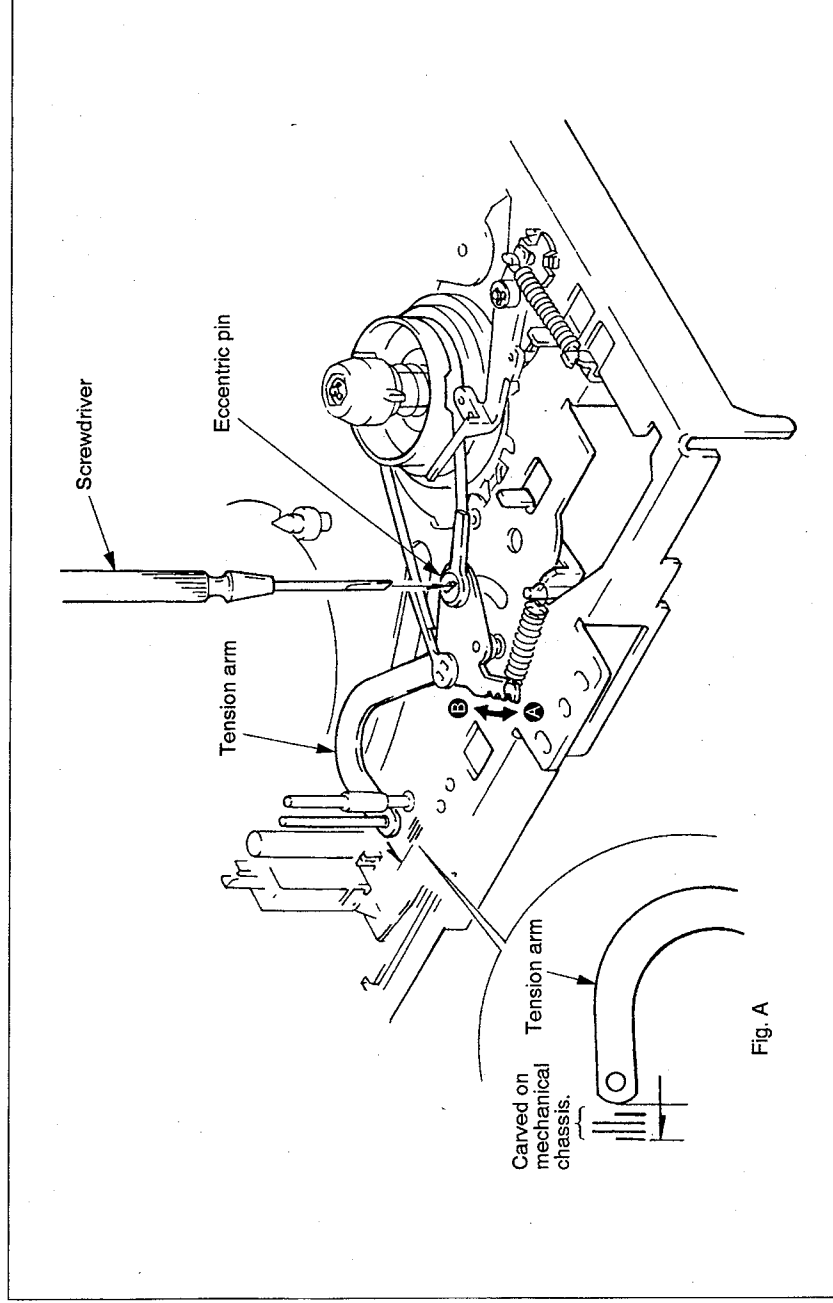


Fig. 4-1

4-1-2. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Fig. 4-2)

Mode	Playback
Jig	Blank tape
Adjustment locations	Guide roller height adjustment screw
Specified value	0 to 0.1 mm

Procedure:

- 1) Set the tape, during CUE playing back, check the height from lower flange of TG7 to the running tape. (Fig. A)
- 2) During REV playing back, check the height from lower flange of TG7 to the running tape. (Fig. B)
- 3) When the difference between items 1) and 2) doesn't go to specified value, adjust by turning TG8 guide roller height adjustment screw.
- 4) Check the tape is creased or not between the capstan and TG8, adjust with TG8 guide roller height adjustment screw so that the tape is not creased during normal playback, CUE and REV.

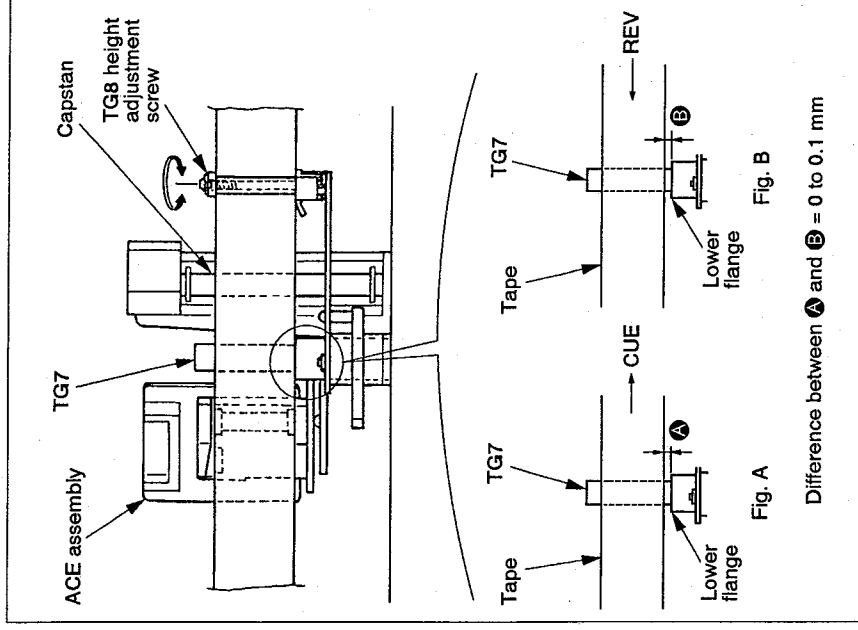


Fig. 4-2

4-1-3. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6 (Fig. 4-3)

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller height adjuster screw

[Adjustment Method]

- 1) Tracking (playback): Turn off the auto tracking, then press the tracking buttons and simultaneously to set the tracking at the center position.
(If adjustment is made after the drum is replaced, the tracking must be set at the max. RF output position.)
- 2) Height adjuster screw: Even out the RF output waveforms.
- 3) Press the tracking buttons (playback), and alternately.
- 4) Check that RF output drops the same amount at the front and rear edges.

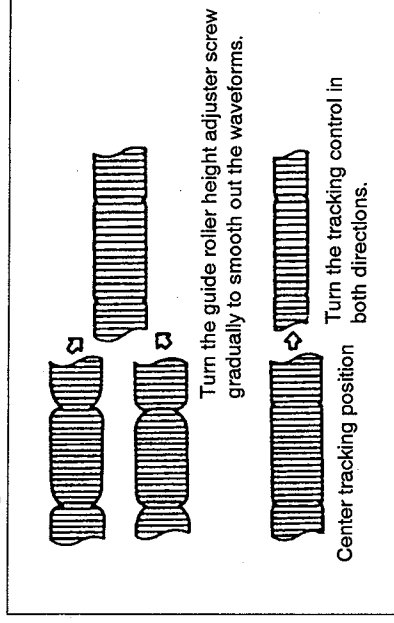


Fig. 4-3

4-1-4. ACE HEAD ASSEMBLY ADJUSTMENT

(ROUGH ADJUSTMENT) (Figs. 4-4 and 4-5)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Tool	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
- 2) Remove the adjustment tool and load a new tape, then set the unit for playback.
- 3) Check that the tape does not curl or rise up noticeably near the ACE head.
- 4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw, the azimuth adjuster screw and the height adjuster nut.
(The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)

- 5) Perform precision adjustment.

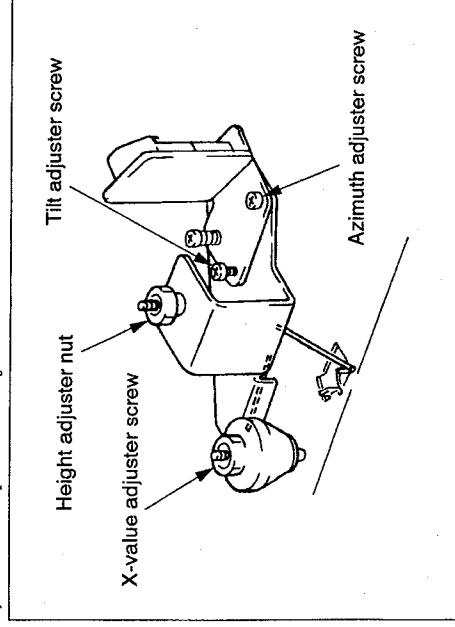


Fig. 4-4

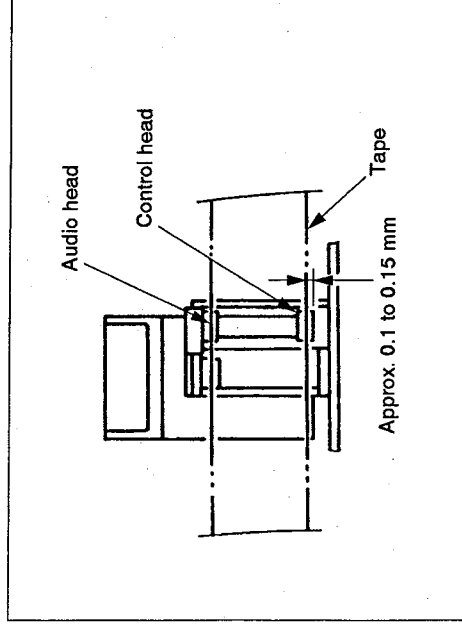


Fig. 4-5

4-1-5. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (1kHz track)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
- 2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

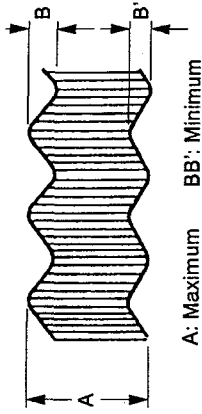


Fig. 4-6

4-1-6. X-VALUE ADJUSTMENT

Purpose: To obtain compatibility with other VTR

Precaution: Be sure to perform the preset tracking adjustment before perform this adjustment. (Refer to the Service Guide.)

Turn off the auto tracking and set the VTR for manual tracking mode.

Mode	Playback
Signal	Alignment tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	X-value adjuster screw

[Adjustment Method]

- **Adjustment by HI-FI alignment tape (NTSC only)**
When the tracking is set at the center position (by pressing the $\square$ and $\triangle$ keys simultaneously), adjust the RF output to maximum.

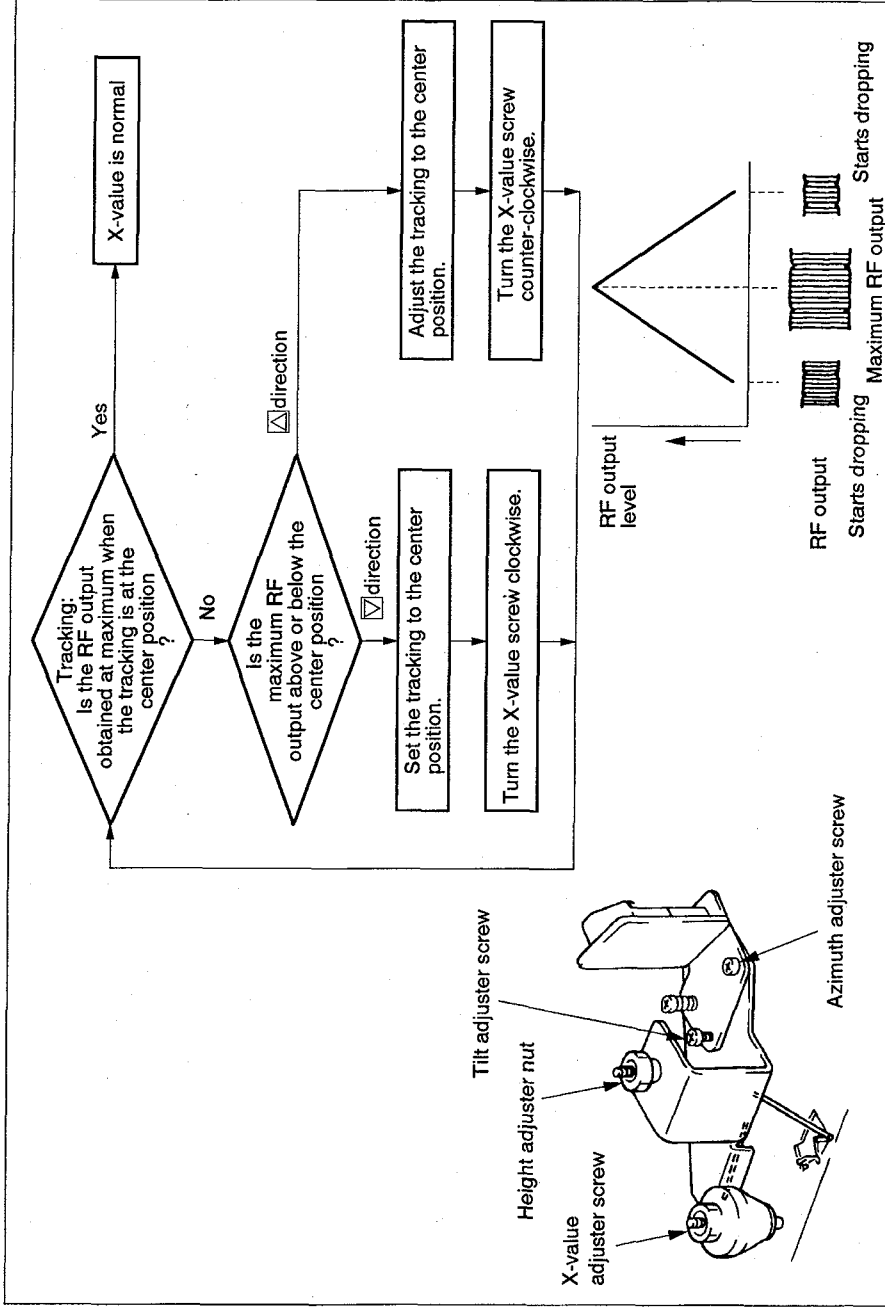


Fig. 4-7

- **Adjustment by alignment tape**

Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and ▴ buttons while the tracking is set at the center position.

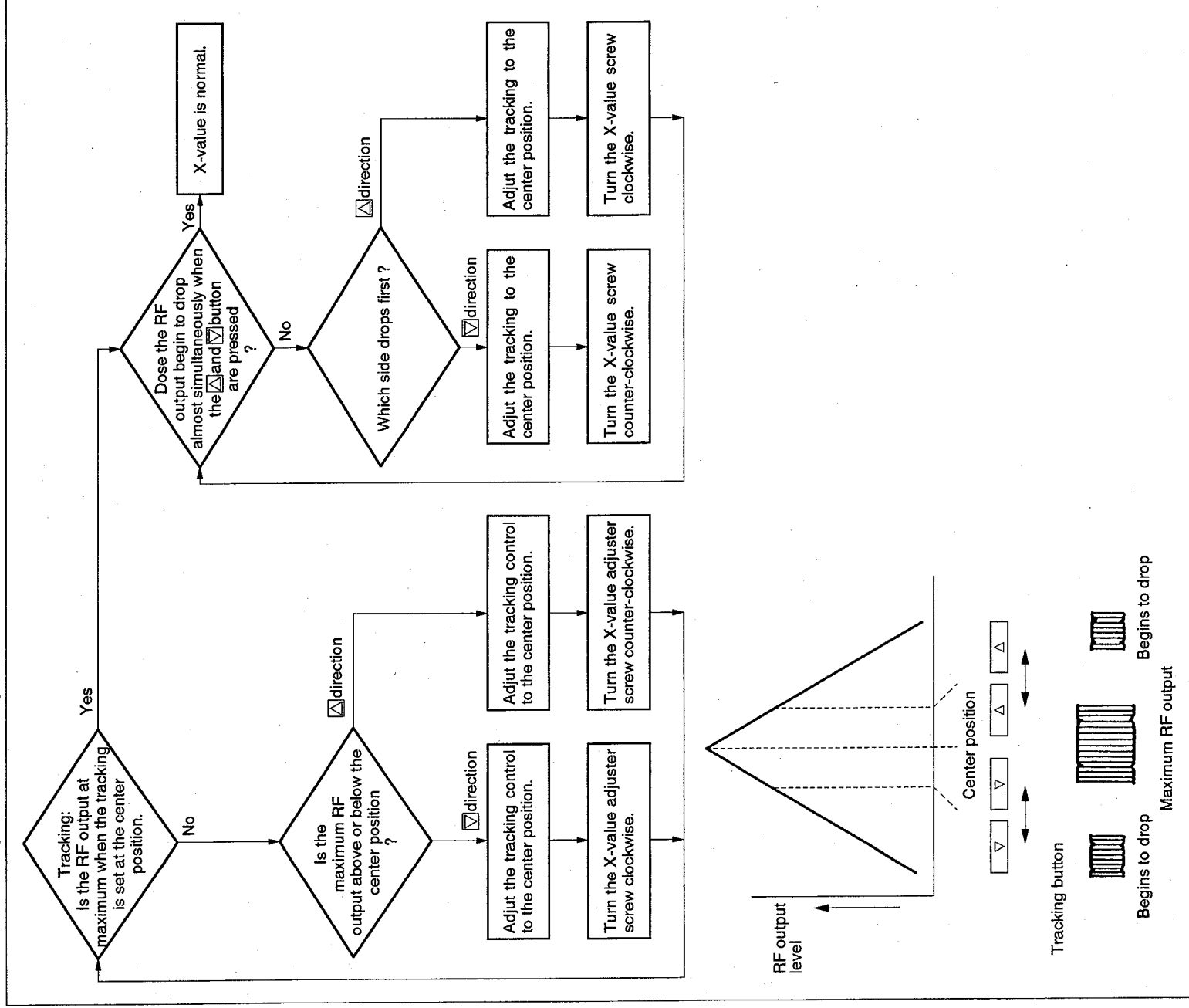


Fig. 4-8

4-1-7. ADJUSTMENTS AFTER REPLACING

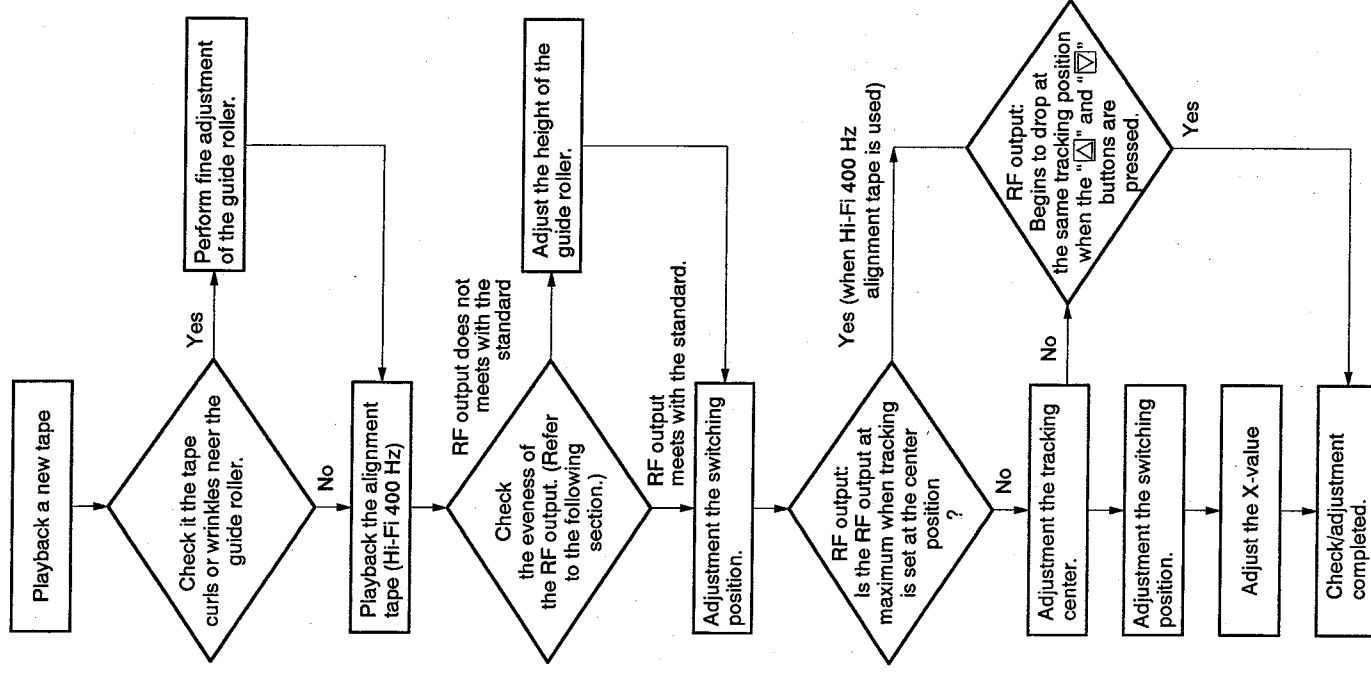
THE DRUM (VIDEO HEAD)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Precaution: Turn off the auto tracking and set the manual tracking mode.

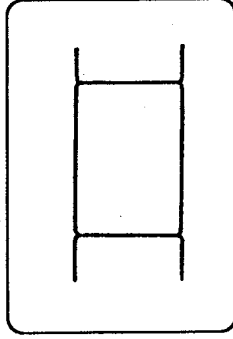
Mode	Playback
Signal	Alignment tape, blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SW P pin for RF PC board check.
Adjustment locations	Guide roller (refer to 4-1-2, 4-1-3.) Switching position, Tracking preset, SP delay mono-multi (Refer to the Service Manual), X-value. (refer to 4-1-6.)

[Adjustment Method]

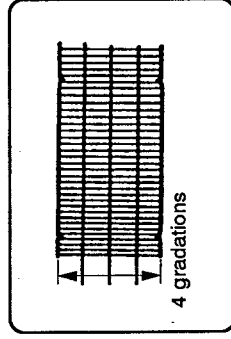


[Checking the evenness and fluctuation of the RF output]

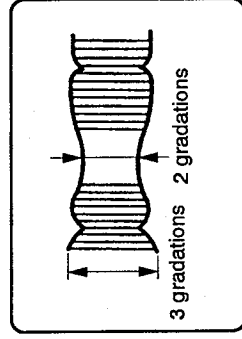
- 1) Set the RF output to the maximum level using the tracking buttons.



- 2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



- 3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
- 4) At this time, check if the minimum amplitude is more than 2 gradations.



- 5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

4-1-8. CHECKING THE TENSION AND TORQUE

Purpose: To check that the tension, torque and compression force of the tape take-up section and mobile sections to ensure smooth tape run and achieve standard VTR performance.

If the tape transport is not smooth or problems occur in relation to the tape transport speed, perform the following check.

Mode	Each operation mode without loading a cassette tape. (Refer to section 1-3.)
Measuring instrument	Torque gauge, Torque gauge adaptor

Item	VTR operation mode	Reel to be measured	Measurement value
Main brake torque	Stop	Supply and take-up reels	170 g•cm or more
Review torque	Review	Supply reel	180 ± 30 g•cm (using the torque cassette)
Take-up torque	Playback	Take-up reel	95 ± 25 g•cm (using the torque cassette)
Back tension torque	Playback	Take-up reel	33 to 44 g•cm (using the torque cassette)

[Check Method]

Measure the torque using the torque gauge and torque gauge adaptor with the torque gauge fixed.

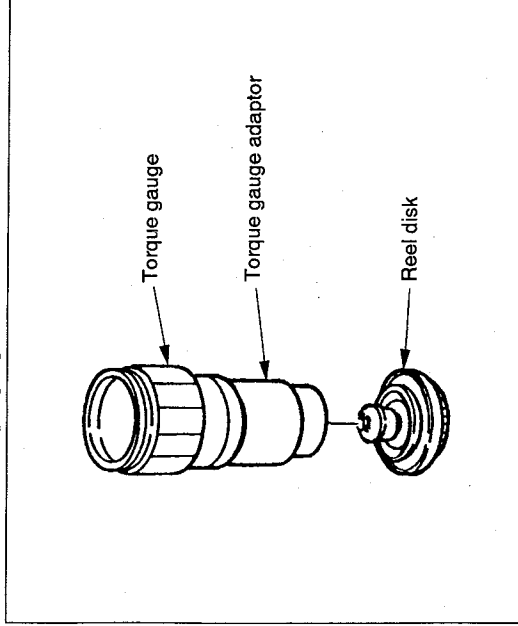


Fig. 4-9

VHS MECHANICAL ADJUSTMENT MANUAL IV

SONY® SERVICE MANUAL

H MECHANISM

SUPPLEMENT-1

1. How to Use the Mode Selector II for Adjusting H Type Mechanism Assembly.
2. Adjusting Mechanism Using New Alignment Tape (KRV-52NE For NTSC).

File this supplement with the VHS mechanical adjustment IV.

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1. HOW TO USE THE MODE SELECTOR II FOR ADJUSTING H TYPE MECHANISM ASSEMBLY

1-1. OUTLINE

To activate the VHS system H type mechanism assembly using mode selector II (J-6082-282-A), use connector conversion jig (J-6090-052-A). By using the connector conversion jig, the following operations are possible.

- Loading and unloading action by the loading motor
- Reading of the current setting of the mode switch
- Normal and reverse rotation of the capstan motor

1-2. PREPARATION

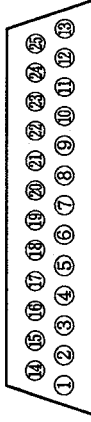
1-2-1. ADDITION OF POWER SUPPLY CABLE

(Already added Mode Selector II also available)

In order to drive the capstan motor, the power +5 V and +12 V are supplied from the Mode Selector II. Disassemble the D-SUB connector of the Mode Selector cable, then solder the following three places.

Supplied 3-pin cable	DSUB connector of the mode selector II	Voltage
Pin 1 (Red index)	Pin 20	+12 V
Pin 2	Pin 25	GND
Pin 3	Pin 24	+5 V

- Connector pin number assignment of the DSUB connector (From the soldering side)



- When connections are made, check that +5 V and +12 V are available at the 3-pin cable connector.

1-2-2. CHECKING THE SOFTWARE VERSION

Turn on the power of the mode selector II.

If the reading for the software version on the mode selector II is not 1.10 or higher, replace the New ROM (J-6082-314-A).

1-3. CONNECTION

1-3-1. CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE MODE SELECTOR II (See Fig. 1-1)

Insert the connectors of the two 6-pin cables (one is white and the other is black) and the 3-pin cable from the mode selector II to the corresponding connectors on the connector conversion jig (J-6090-052-A).

1-3-2. CONNECTION BETWEEN THE CONNECTOR CONVERSION JIG AND THE H TYPE MECHANISM ASSEMBLY

With the power of the mode selector II turned off, insert the following three connectors to the corresponding connectors on the H type mechanism assembly.

- 3-pin connector for the loading motor
 - 5-pin connector for the mode switch
 - 8-pin connector for the capstan motor
- Set the speed control for the minimum setting (fully counterclockwise).

1-4. OPERATION

1-4-1. OPERATION OF THE LOADING MOTOR ON THE H TYPE MECHANISM ASSEMBLY

- (1) Select the H type mechanism assembly setting on the mode selector II.

- (2) After this, procedures are the same as those for the previous model types.

For the operating method, see pages 3 to 5 of "8 mm Video Mechanism Manual VI (TK Mechanism) Supplement-1".

For the loading method, see page 3 of "VHS Mechanical Adjustment Manual IV (H Mechanism)".

1-4-2. OPERATION OF THE CAPSTAN MOTOR ON THE H TYPE MECHANISM ASSEMBLY

- (1) For the loading motor operation under Section 1-4-1, change the mode setting to the FF/REW mode with the mode switch.
- (2) Turn the speed control gradually in clockwise direction, and the capstan motor starts rotating. To turn the capstan motor in desired rotating direction, change the FWD/RVS setting of the rotating direction switch.

1-5. PRECAUTIONS

- Turn the speed control only when necessary. Otherwise, hold the speed control turned at fully counterclockwise direction. If the power of the mode selector II is turned on with the speed control turned in clockwise direction, +12V power fails and the power of the mode selector II cannot be turned on.
- Although the connector conversion jig (J-6090-052-A) has rubber feet, do not make a short circuit on the bottom surface of the connector conversion jig via foreign conductive materials.

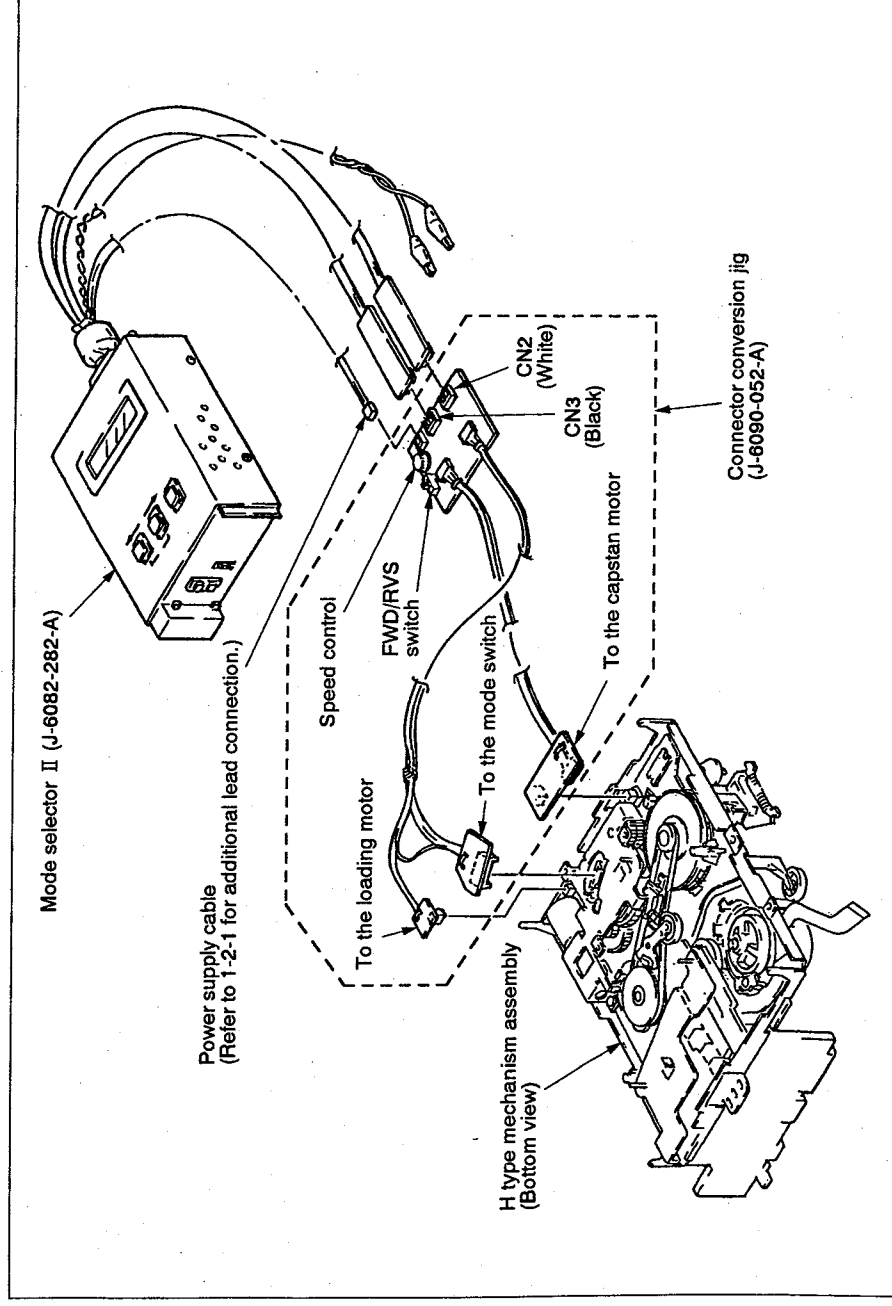


Fig. 1-1

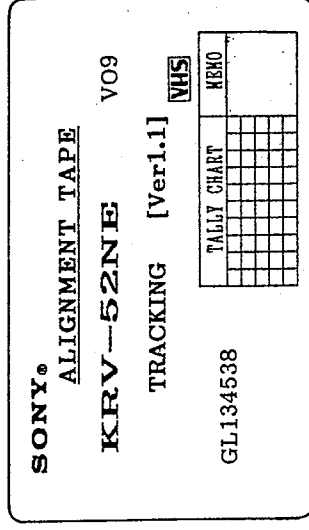
2. ADJUSTING THE MECHANISM USING NEW ALIGNMENT TAPE (KRV-52NE for NTSC)

The conventional alignment tape (For NTSC) is now replaced with alignment tape KRV-52NE, and the following describes how to align the mechanism using the KRV-52NE. For details on the use of KRV-51N2 for each model, refer to the service manuals which will be issued in the future.

Name	Parts No.	Remarks
Alignment tape KRV-52NE for NTSC	8-192-605-41	For tape path, audio azimuth, and X-value adjustments
Alignment tape KRV-51N2 for NTSC	8-192-605-32	For electrical adjustments (RF, AF, and switching position) and operation check

Note: The KRV-52NE has or does not have Ver No. depending on new or old type as shown below. (New one has Ver No.)

Note that an adjusting method of X-value is different.



Contents:

KRV-52NE (NTSC)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	5 kHz full tracks

KRV-51N2 (NTSC)

Class	Mode	Time	Video	Audio (HIFI/Normal)
1	SP	7 min.	Color bar	400 Hz
2	SP	3 min.	Mono. scope	400 Hz
3	EP	7 min.	Color bar	400 Hz
4	EP	3 min.	Mono. scope	400 Hz

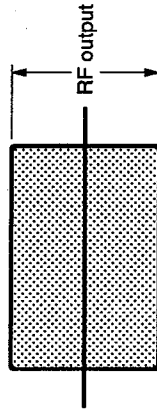
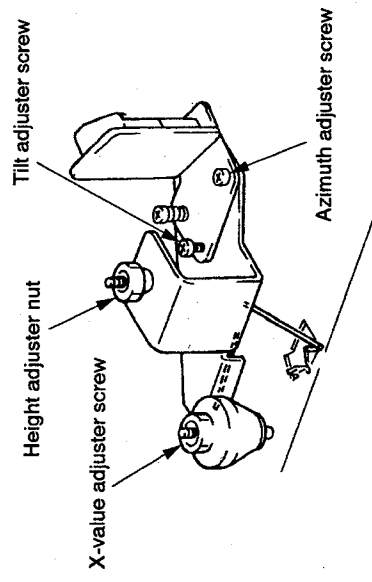
2-1. ADJUSTMENT USING ALIGNMENT TAPE (KRV-52NE for NTSC having no version No.) 2-1-1. X-VALUE ADJUSTMENT (Using the tape having no version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking

control at the center position for the VCRs equipped with the and tracking control keys, press both the and tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC having no version No.)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw

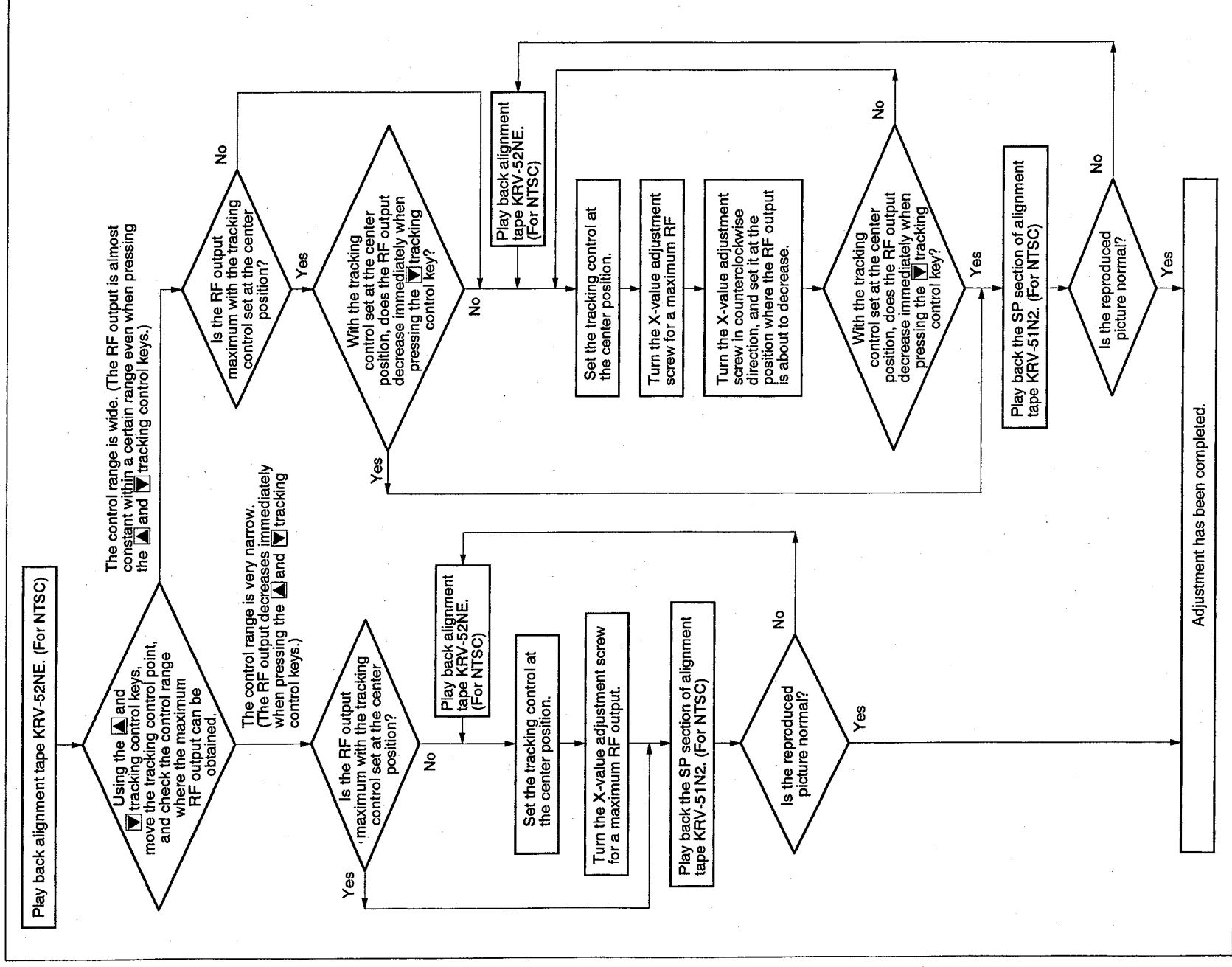


RF output shall be maximum at the center position of the tracking control.

[Adjustment Method]

Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the tracking control key is pressed.

X-VALUE ADJUSTMENT (Using the tape having no version No.)



When adjustment is complete, adjust the height of No. 3 and No. 6 guide rollers on page 10.

2-2. ADJUSTMENT USING ALIGNMENT TAPE

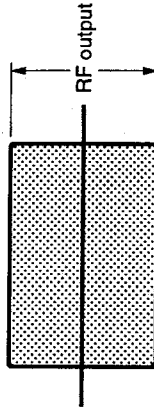
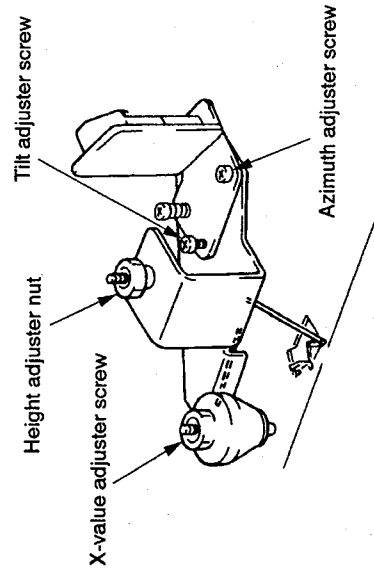
(KRV-52NE for NTSC having the version No.)

2-2-1. X-VALUE ADJUSTMENT (Using the tape having the version No.)

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the  and  tracking control keys, press both the  and  tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking AUTO/MANUAL key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC having the version No.)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw

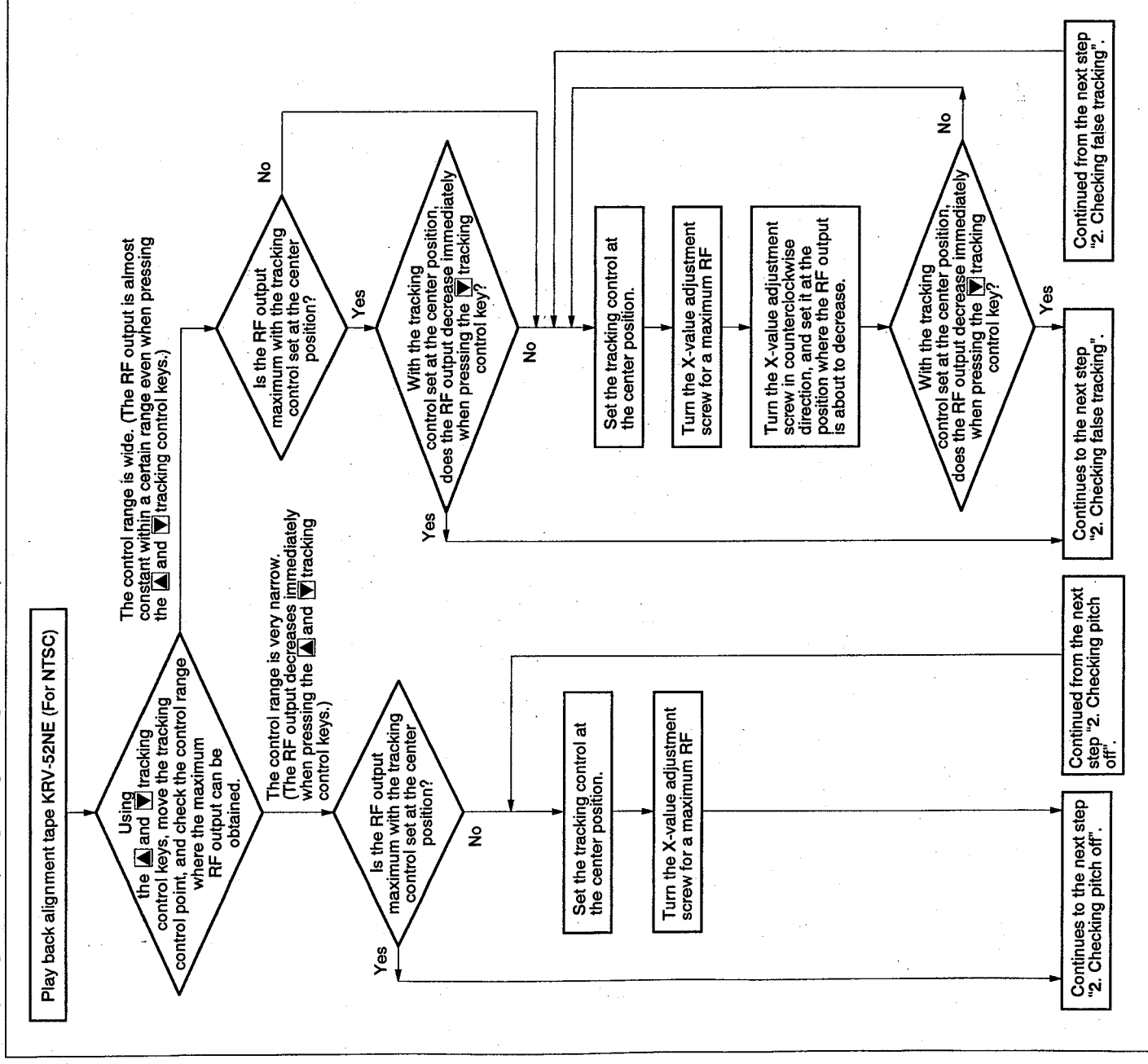


RF output shall be maximum at the center position of the tracking control.

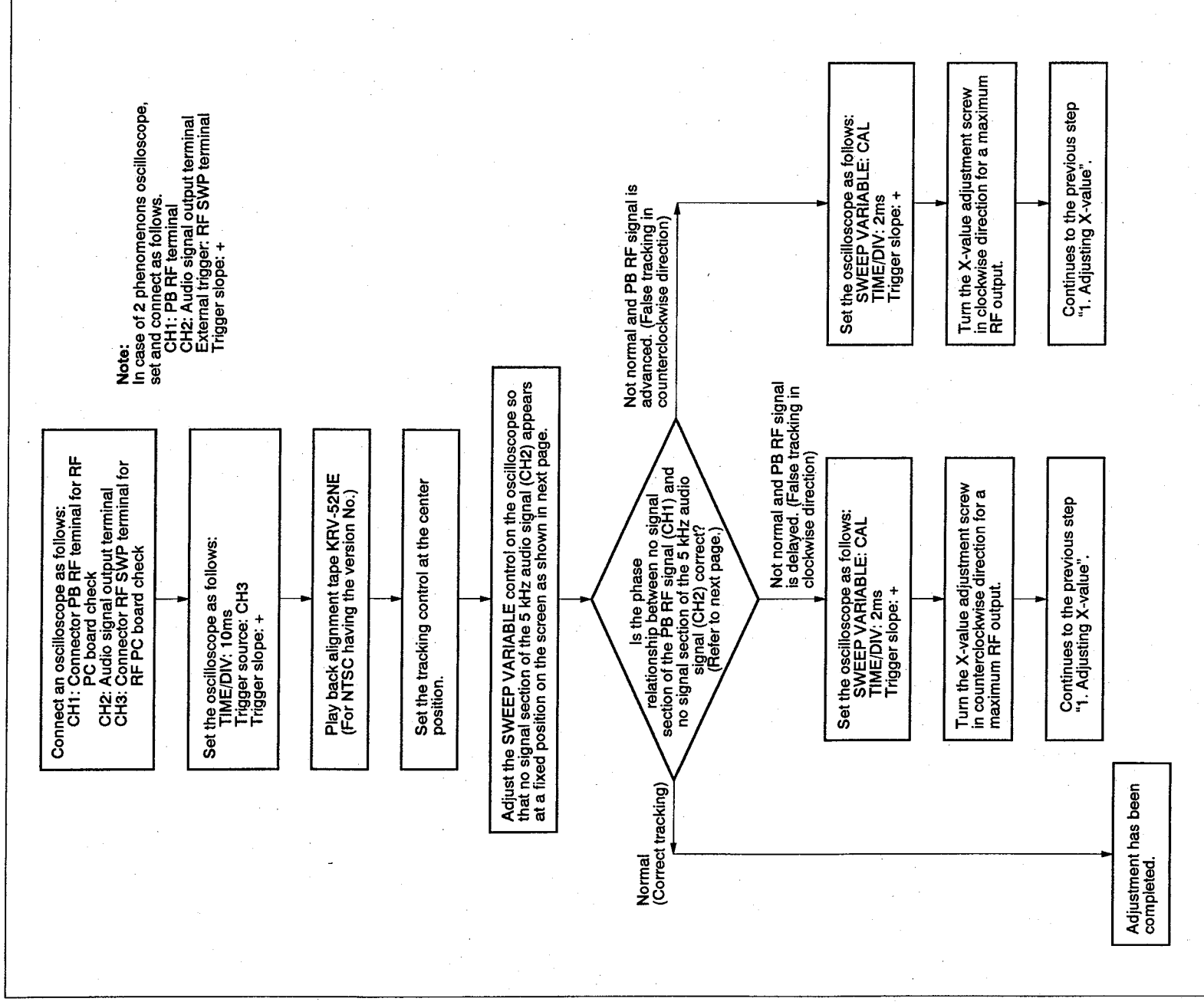
[Adjustment Method]

Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the ▽ tracking control key is pressed.

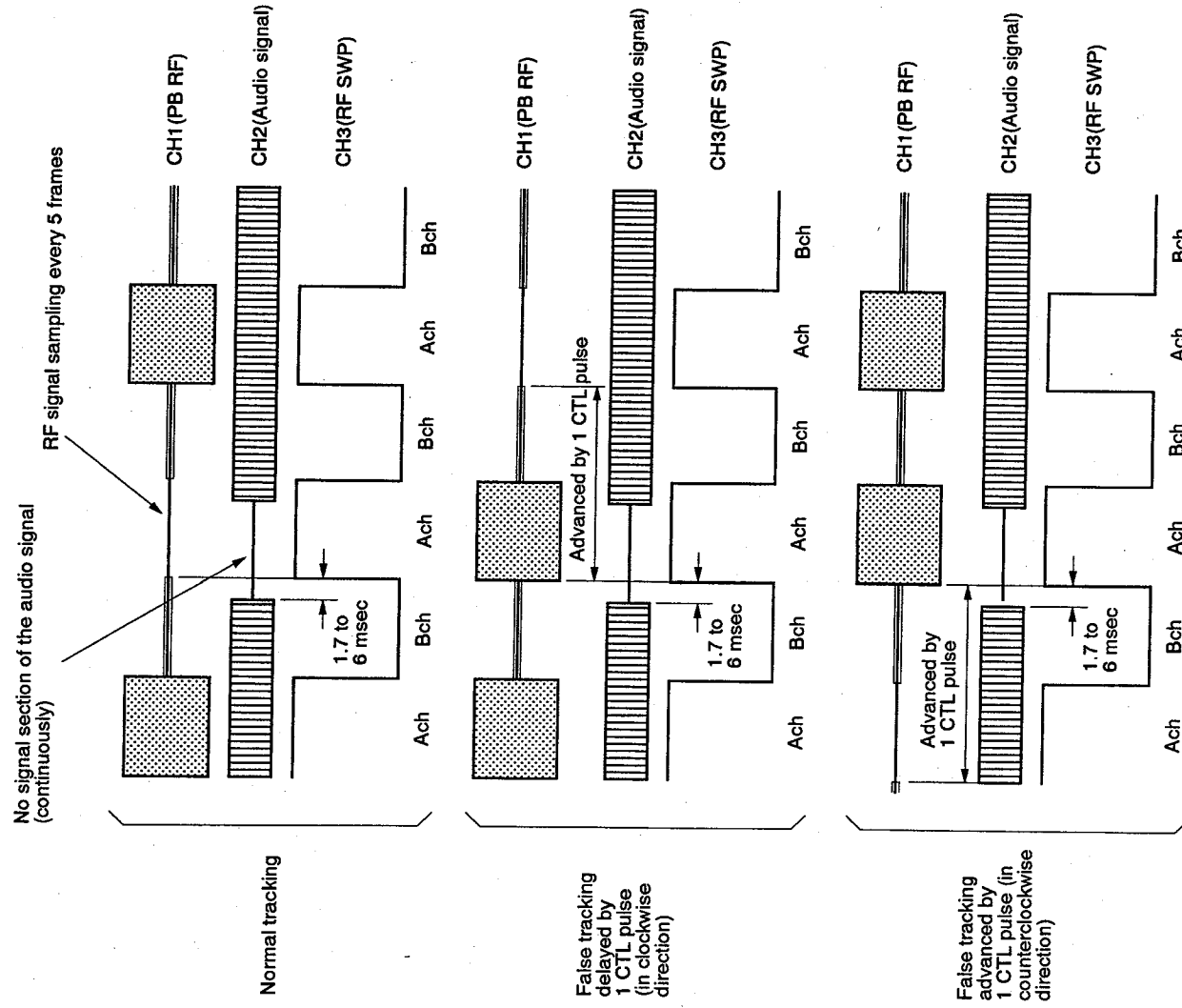
1. Adjusting X-value (Using the tape having the version No.)



2. Checking false tracking (Using the tape having the version No.)



Using the tape having the version No.

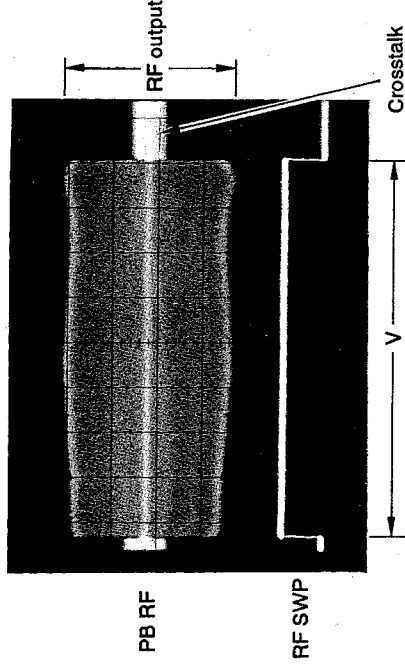


2-3. ADJUSTING THE MECHANISM USING ALIGNMENT TAPE (KRV-52NE for NTSC)

2-3-1. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO. 3 AND NO. 6

Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	Height adjustment screw for No.3 tape guide roller Height adjustment screw for No.6 tape guide roller

- 2) Check if the RF output changes in amplitude by pressing the tracking control key. The RF output should change periodically (changes from a minimum amplitude to a maximum amplitude, and to the minimum amplitude again).

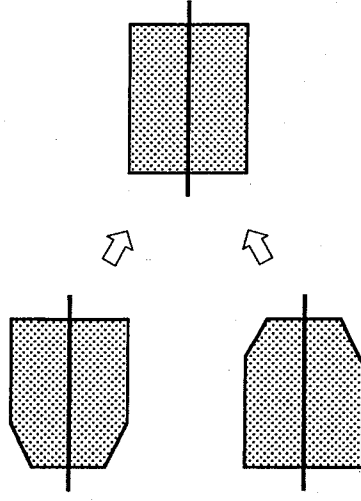


[Adjustment Method]
The following adjustment shall be carried out after completed Section 2-1-1 "X-value adjustment and check".

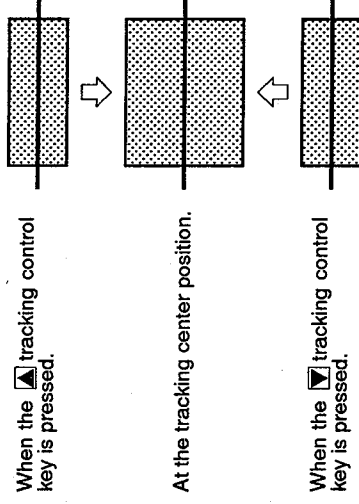
- 1) Deactivate the automatic tracking control, and set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the **▲** and **▼** tracking control keys, press both the **▲** and **▼** tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking **AUTO/MANUAL** key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

- 3) Turn the height adjustment screws of tape guide rollers No.3 and No.6 so that the RF output envelope becomes as flat as possible.
- 4) Press the **▲** tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.
- 5) Press the **▼** tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.

Turn the height adjustment screws of tape guide rollers No.3 and No.6 little by little so that the RF output envelope becomes as flat as possible.



Press the **▼** tracking control key, then the **▼** tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.

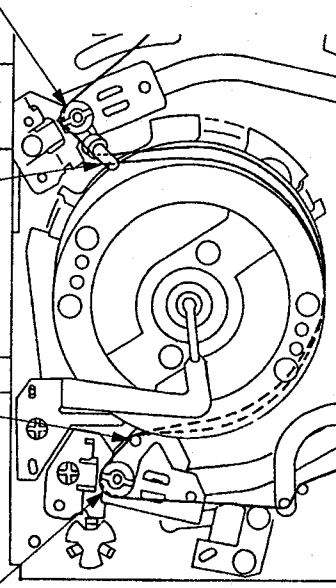


Height adjustment screw of tape guide roller No.3

Tape guide No.4

Tape guide No.5

Height adjustment screw of tape guide roller No.6



2-3-2. ACE HEAD ASSEMBLY ADJUSTMENT

(ROUGH ADJUSTMENT) (Figs. 2-1 and 2-2)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Jig	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Mount the ACE head assembly. At this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
- 2) Remove the adjustment tool and load a new tape, then set the unit for playback.
- 3) Check that the tape does not curl or rise up noticeably near the ACE head.
- 4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw and the height adjuster nut.
(The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)

- 5) Perform precision adjustment.

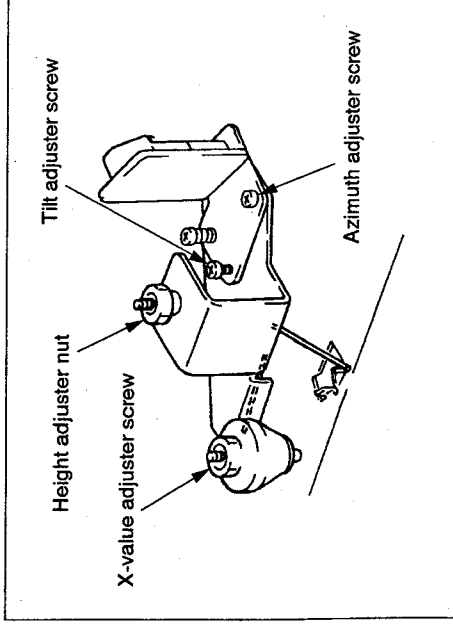


Fig. 2-1

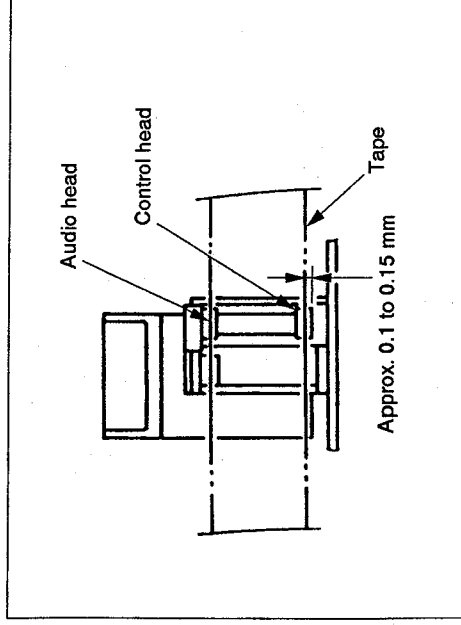


Fig. 2-2

2-3-3. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (KRV-52NE 5 kHz) (For NTSC)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
- 2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

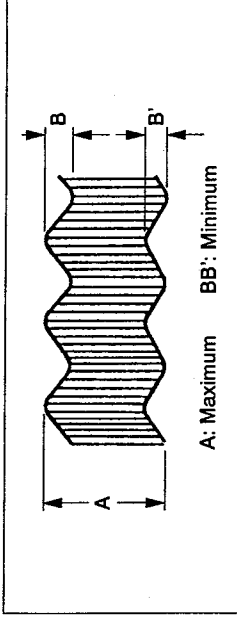


Fig. 2-3

2-3-4. ADJUSTMENTS AFTER REPLACING

THE DRUM (VIDEO HEAD)

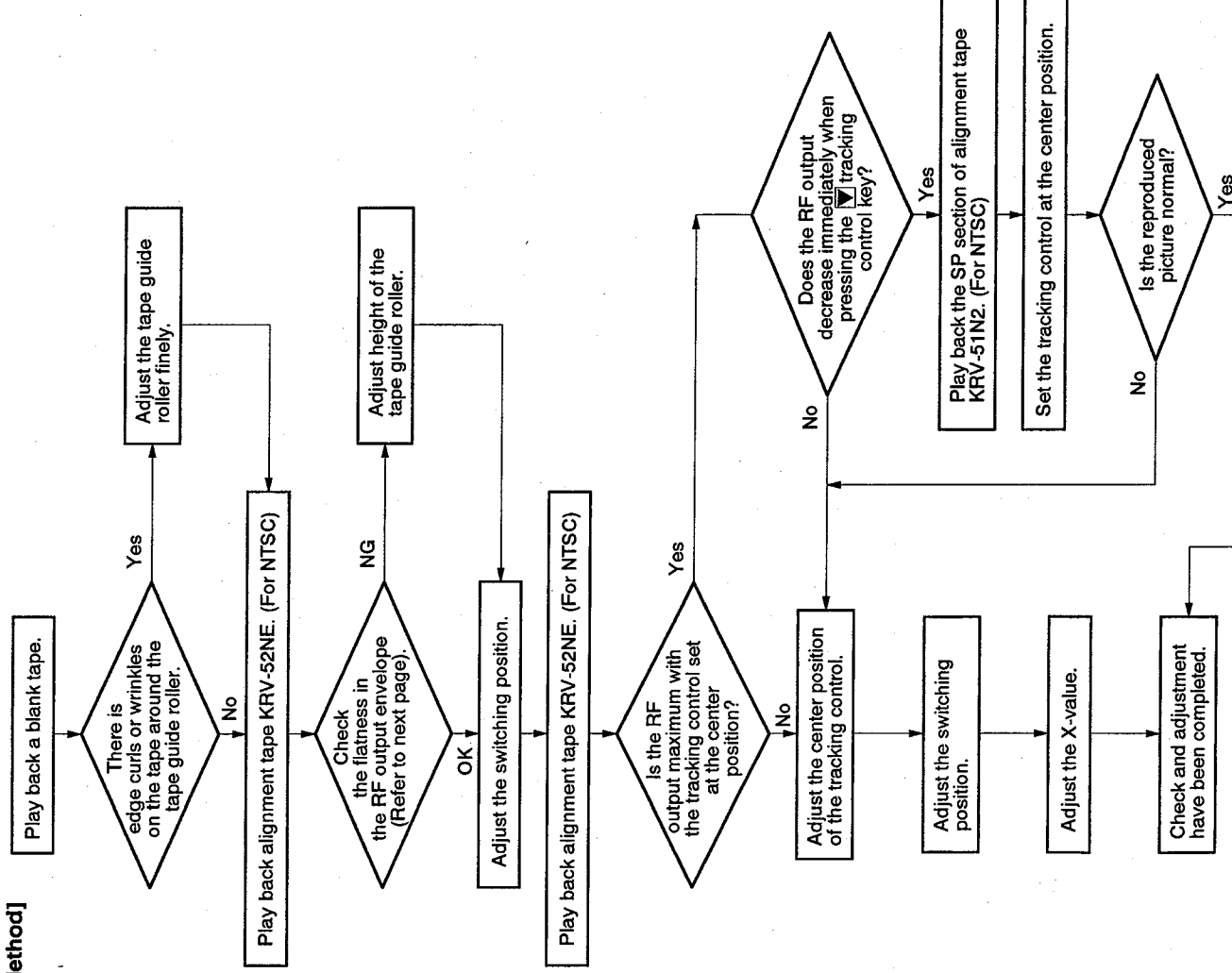
Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Note 1: Deactivate the automatic tracking control for setting the mechanism in manual tracking control mode.

Note 2: To set the tracking control at the center position, deactivate the automatic tracking control by pressing the tracking **[AUTO/MANUAL]** key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

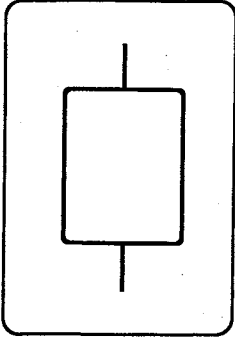
Mode	Playback
Signal	Alignment tape KRV-52NE (For NTSC), blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SWP pin for RF PC board check.
Adjustment locations	Guide roller (Refer to 2-3-1.) Switching position (Refer to the Service Manual) X-value (Refer to 2-1-1, 2-1-2.)

[Adjustment Method]

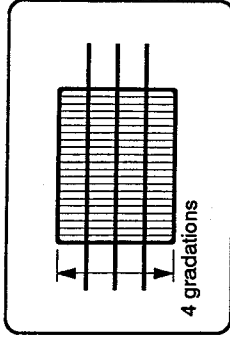


[Checking the evenness and fluctuation of the RF output]

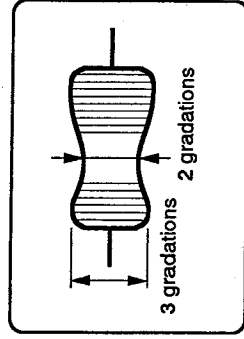
- 1) Set the RF output to the maximum level using the tracking buttons.



- 2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



- 3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
- 4) At this time, check if the minimum amplitude is more than 2 gradations.



- 5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

VHS MECHANICAL ADJUSTMENT MANUAL IV

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Quality Engineering Dept.

VHS MECHANICAL ADJUSTMENT MANUAL IV

SONY® SERVICE MANUAL

H MECHANISM

SUPPLEMENT-2

File this supplement with the VHS mechanical adjustment IV and supplement-1.

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2-6.	TG8 Guide Roller Height Adjustment	6

1. CORRECTION

In the VHS Mechanism Adjustment Manual IV (Supplement-1), an adjustment sequence was wrong, and it is corrected as follow;

1-1. Adjustment Sequence (VHS Mechanism Adjustment Manual IV (Supplement-1) Page 6 to 11)

- (1) Adjustment of No. 3 and No. 6 guide roller height

Delete the "The following adjustment shall be carried out after completed Section 2-1-1 "X-value adjustment and check" under "Adjustment Method" on page 10.

- (2) Adjustment of ACE head assembly

Note: In the adjustment of ACE head assembly (coarse adjustment and fine adjustment), if a azimuth, height and tilt were adjusted, again adjust the height of No. 3 and No. 6 guide rollers.

- (3) Adjustment of X value



2. MODIFICATION

2-1. CHANGING THE RECORDED CONTENTS OF ALIGNMENT TAPE

KRV-52NE (NTSC) (Ver. 1.2)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	5 kHz → 4 kHz full tracks

2-2. TG2 ROLLER, FE HEAD ASSEMBLY (Refer to VHS Mechanical Adjustment Manual IV page14)

- The TG2 roller is provided with either of two types, fixed or straight. For the fixed type, section 3-5 is added.

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

- 1) Remove screw ① to pull out FE head assembly ②.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller.

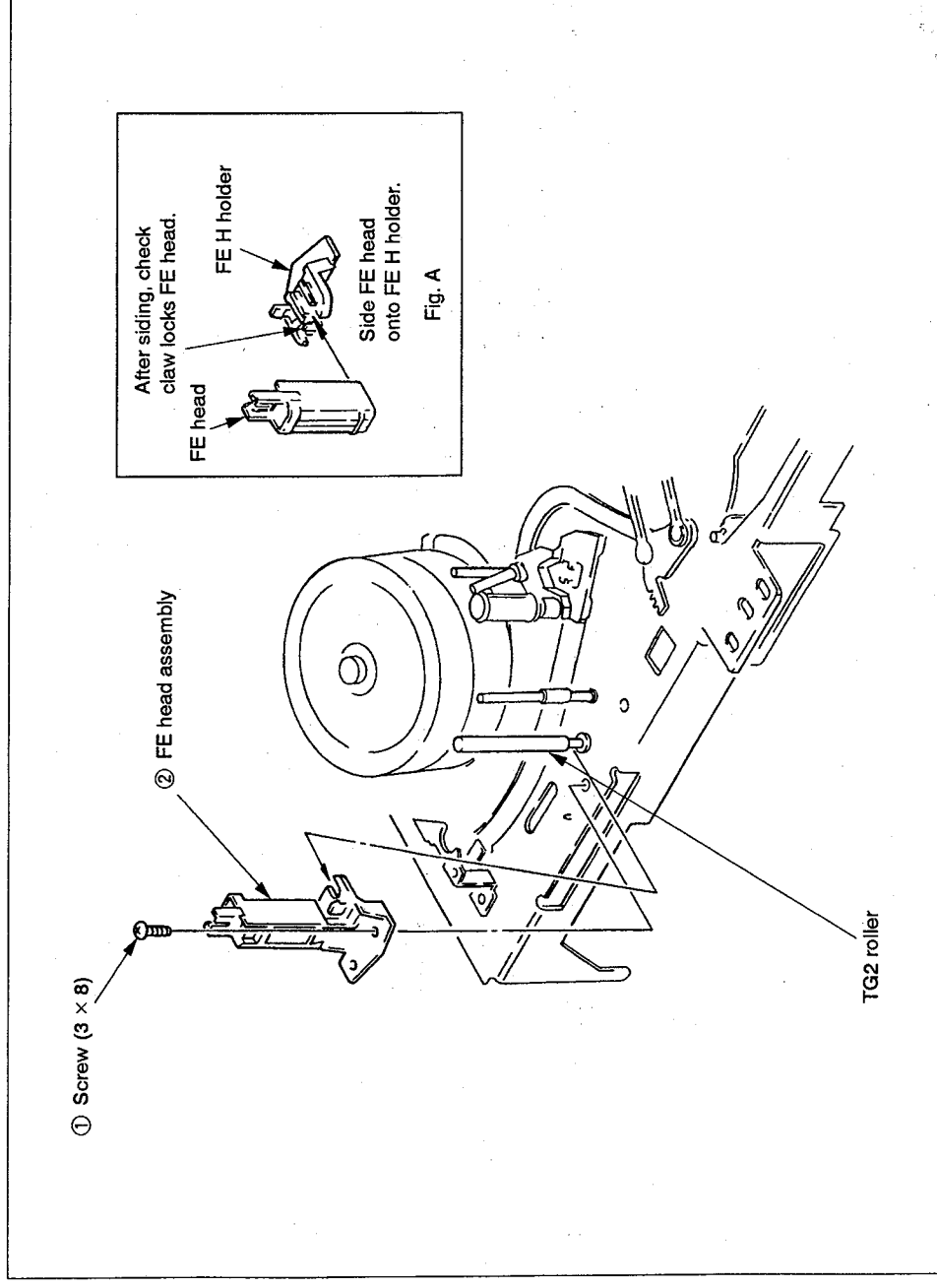


Fig. 3-5

2-3. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Refer to VHS Mechanical Adjustment Manual IV page 17)

- There is another type in TG3 and TG6 guide roller assemblies, which is not attached with a screw (B2X3). For the screw/less type, section 3-8 is added.

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

- 1) TG3 guide roller assembly ① by turning it in arrow **A** direction.
- 2) Removal the spring ②.
- 3) TG6 guide roller assembly ③ by turning it in arrow **B** direction.
- 4) Removal the spring ④.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ①, ③.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

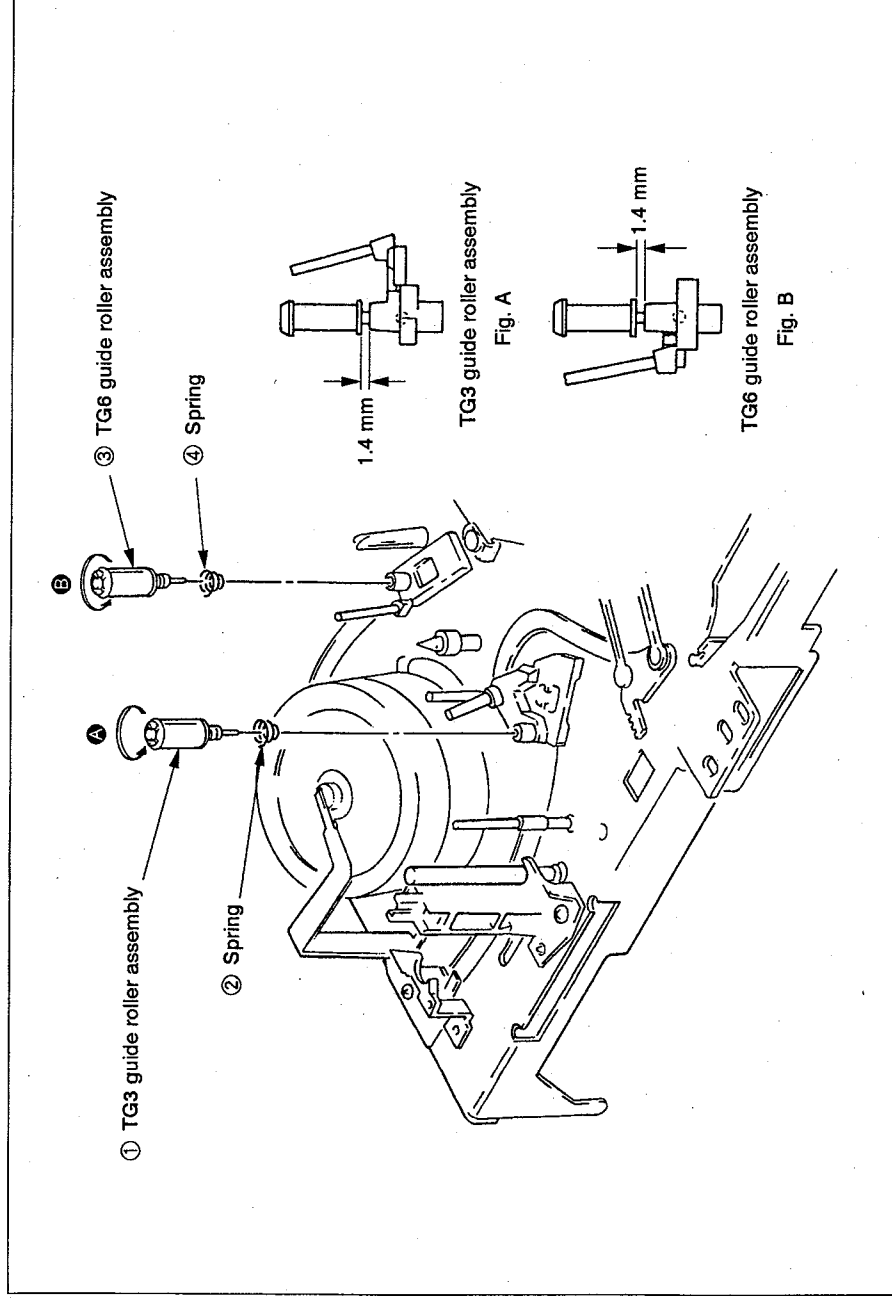
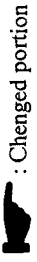


Fig. 3-8

2-4. TG8 ASSEMBLY (Refer to VHS Mechanical Adjustment Manual IV page 23)

- As the shape of TG8 assembly was changed, Section 3-13 is changed.



: Changed portion

3-13. TG8 ASSEMBLY (Fig. 3-15)

- 1) Remove TG7 tape retainer ① to pull out TG8 assembly ②.

[Note on Mounting]

- Apply FLOIL SG-055G (Jig Ref. No. J-12) to ☆ marked portion.
- Keep clean the surface contacts tape of TG8 assembly ②.
- Be careful not to change the shape of TG7 tape retainer ①.
- After attaching the TG7 tape retainer ①, check that side A of ① is below side B of the stepped-part of the TG7 shaft. (Fig. A)

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

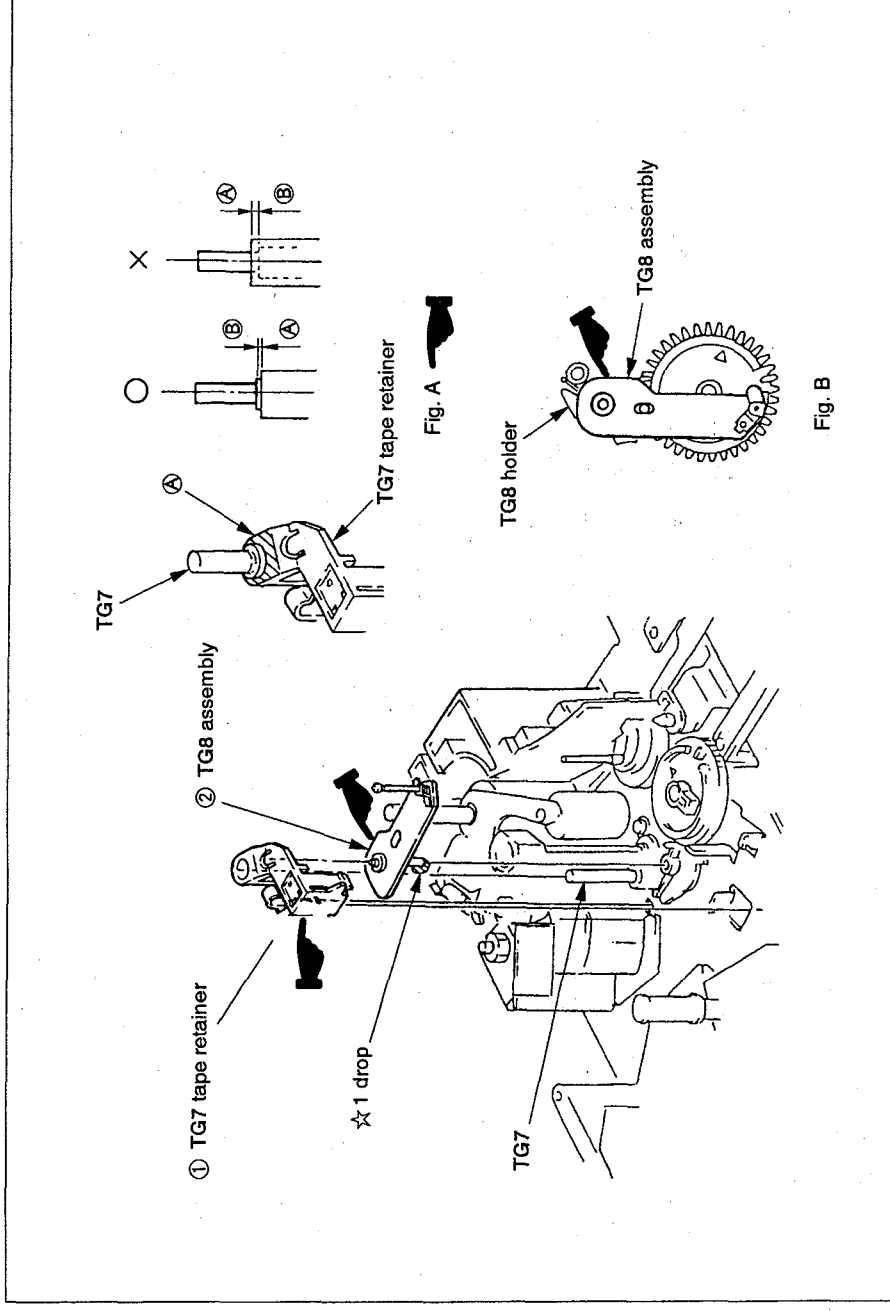


Fig. 3-15

2-5. TENSION REGULATOR (TG1) POSITION/ TENSION ADJUSTMENT (Refer to VHS Mechanical Adjustment Manual IV page 35)

- As the tension regulator position and tension adjustment were changed, the tension adjustment and Fig. 4-1 are changed.

 : Changed portion

• Tension adjustment

Mode	Playback
Measuring instrument/tool	Torque cassette
Adjustment locations	Position for hooking the tension spring
Specified value	$34 \pm 4 \text{ g} \cdot \text{cm}$ 

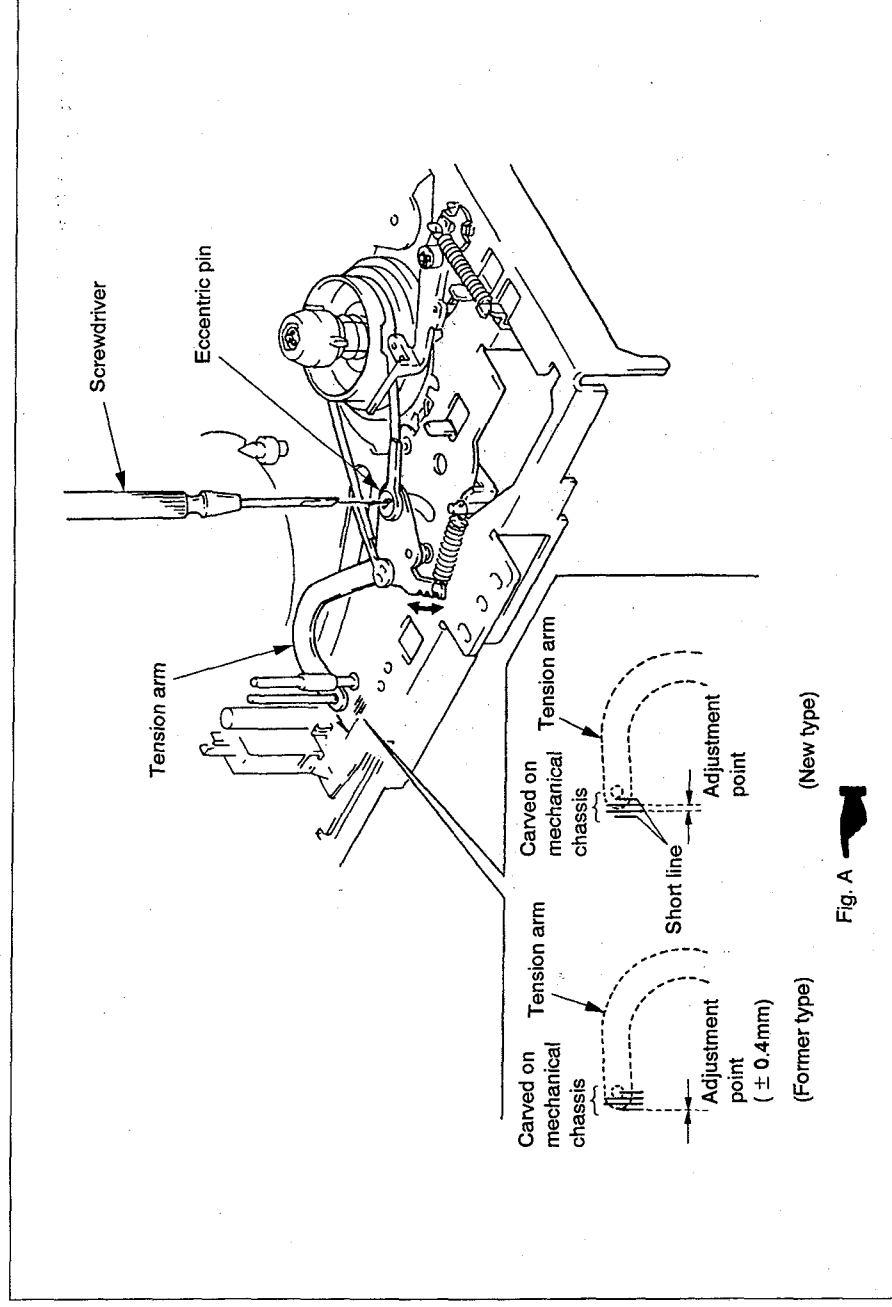


Fig. 4-1

VHS MECHANICAL ADJUSTMENT MANUAL IV

2-6. TG8 GUIDE ROLLER HEIGHT ADJUSTMENT (Refer to VHS Mechanical Adjustment Manual IV page 36)

- As the use of TG8 height adjusting screw was cancelled, section 4-1-2 is changed.

4-1-2. TG7 TAPE PATH ADJUSTMENT (Fig. 4-2)

[Adjustment Method]

- 1) Load a tape, and playback the tape in the CUE mode, confirm the distance between lower flange of No. 7 guide roller and lower side of tape (Fig. A).

- 2) Then, feeding the tape in the REV mode, confirm the distance between lower flange of No. 7 guide roller and lower side of tape.
- 3) If the tape height in the REV feed is higher than in the CUE playback (Fig. B), rotate the ACE head flapping adjust screw in the direction **A** so that a difference in tape height between CUE mode and REV mode becomes zero.
- 4) If the tape height in the REV feed is lower than in the CUE playback (Fig. C), rotate the ACE head flapping adjust screw in the direction **B** so that a difference in tape height between CUE mode and REV mode becomes zero.

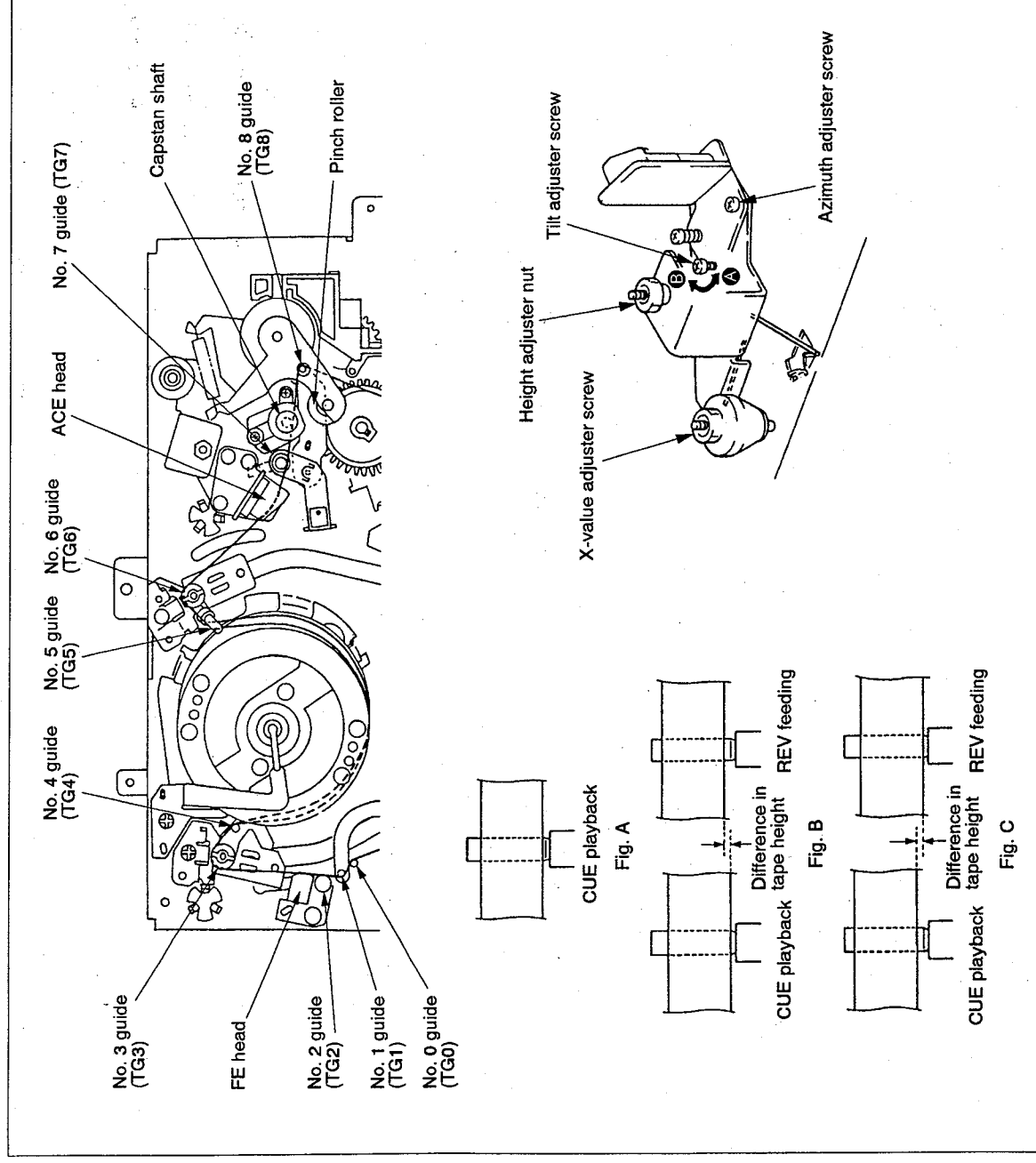


Fig. 4-2

VHS MECHANICAL ADJUSTMENT MANUAL IV

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H. MECHANISM

SERVICE MANUAL

SUPPLEMENT-3

File this supplement with the VHS mechanical adjustment IV and supplement-1, 2.

Subject: Mechanism chassis assembly changed.
PAL alignment tape changed.

(SL-600060)

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1. MODIFICATION

1-1. PARTS REQUIRING CLEANING (Refer to VHS Mechanical Adjustment Manual IV page 7)

- Parts requiring a cleaning were changed in shape, and therefore, Fig. 2-1 for new type is added.

 : Modified portion

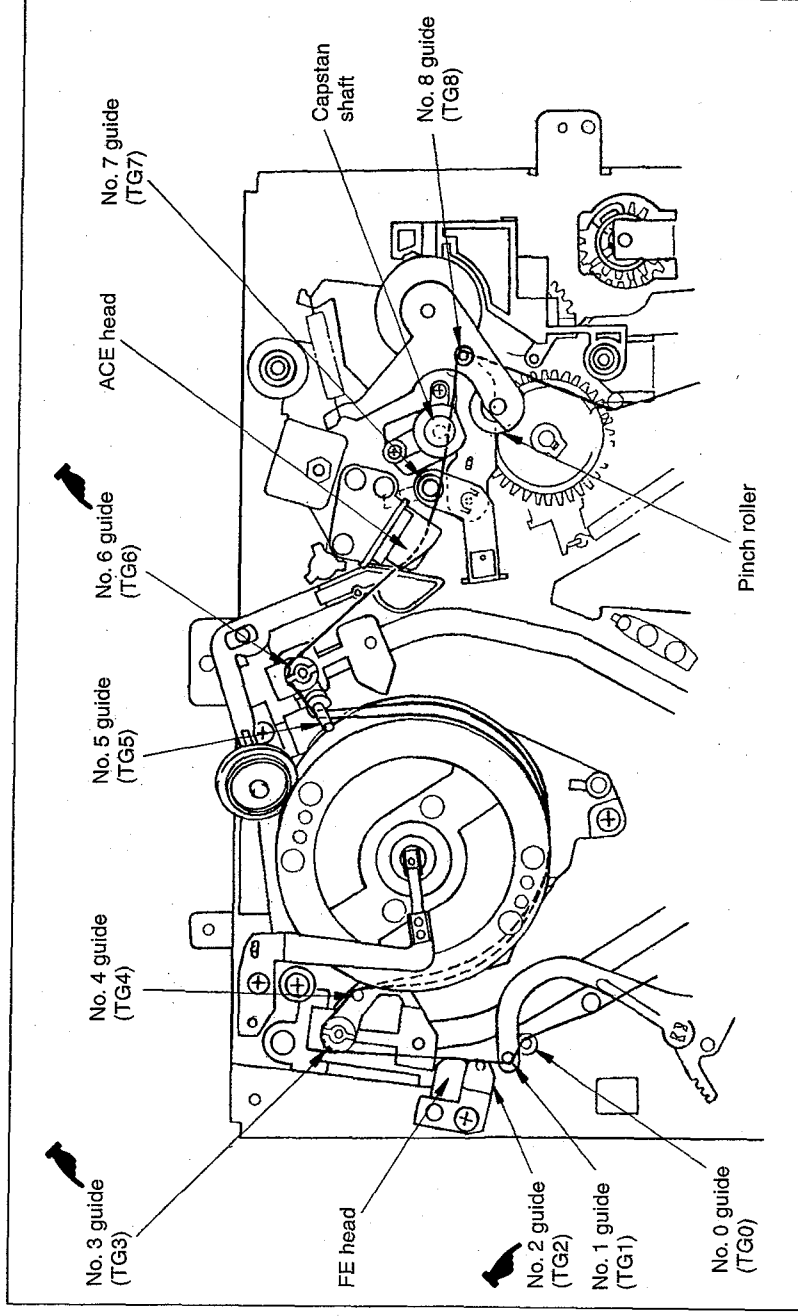


Fig. 2-1 Parts Requiring Cleaning

1-2. DRUM ASSEMBLY, DRUM BASE (Refer to VHS Mechanical Adjustment Manual IV page 11)

- The ground shaft assembly was changed and the drum base was added, and therefore Section 3-2 for new type is added.

3-2. DRUM ASSEMBLY, DRUM BASE (Fig. 3-2)

- 1) Remove screw ①.
- 2) Remove ground shaft assembly ② not to touch its tip with bare hand or tools.
- 3) Remove screws ③ to remove drum assembly ④.
- 4) Remove screws ⑤ to remove drum base ⑥.

[Note on Mounting]

- Don't touch head chips and ground shaft assembly ④ with bare hand or tools.
- Keep clean the surface contacts tape of drum assembly ④.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

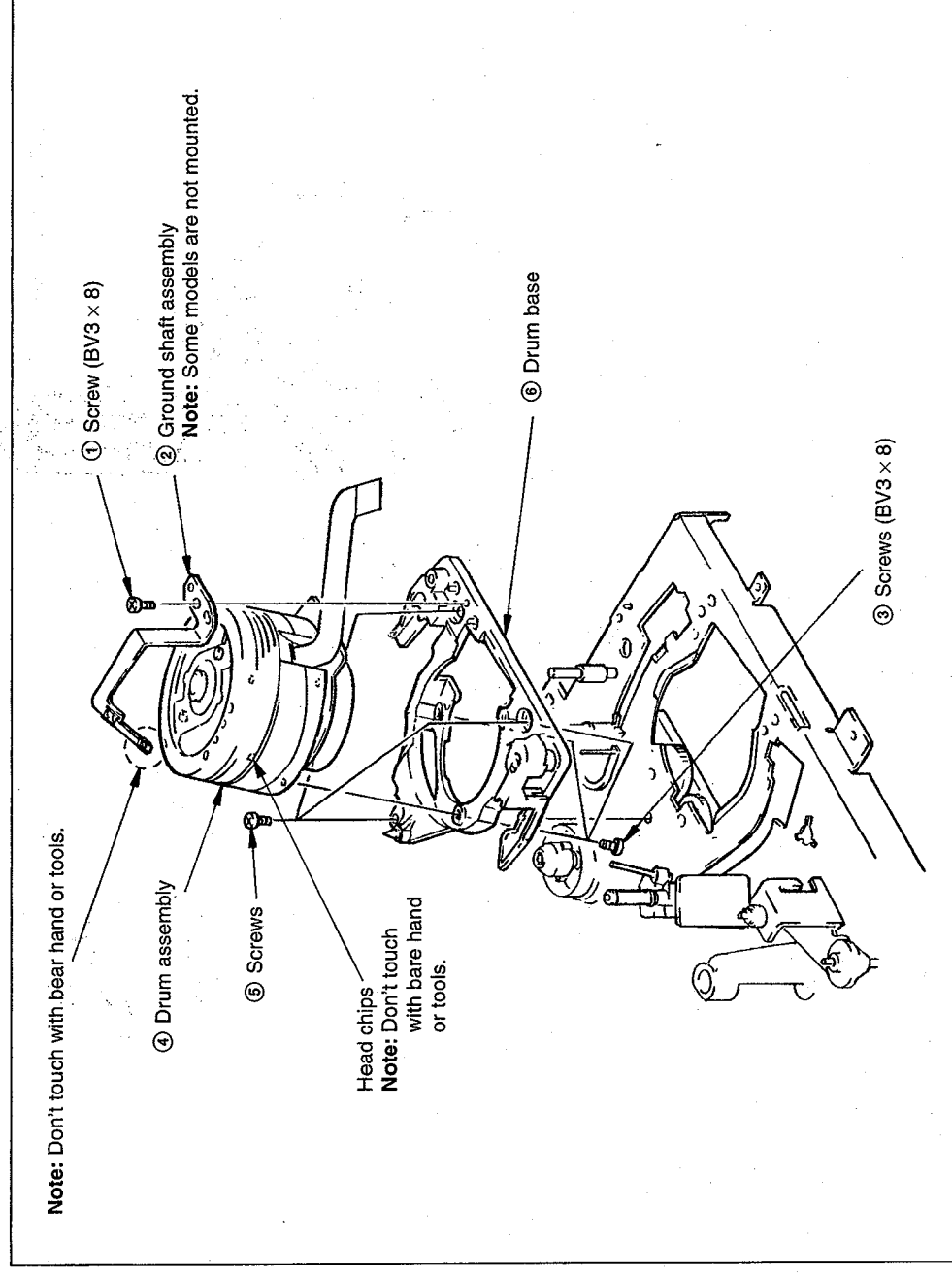


Fig. 3-2

1-3. TG2 ROLLER, FE HEAD ASSEMBLY (Refer to VHS Mechanical Adjustment Manual IV page 14)

- The TG2 roller was assembled in the FE head assembly, and therefore Section 3-5 for new type is added.

3-5. TG2 ROLLER, FE HEAD ASSEMBLY (Fig. 3-5)

- 1) Remove screw ①.
- 2) Pull out FE head assembly ②.

[Note on Mounting]

- Keep clean the surface contacts tape of TG2 roller.

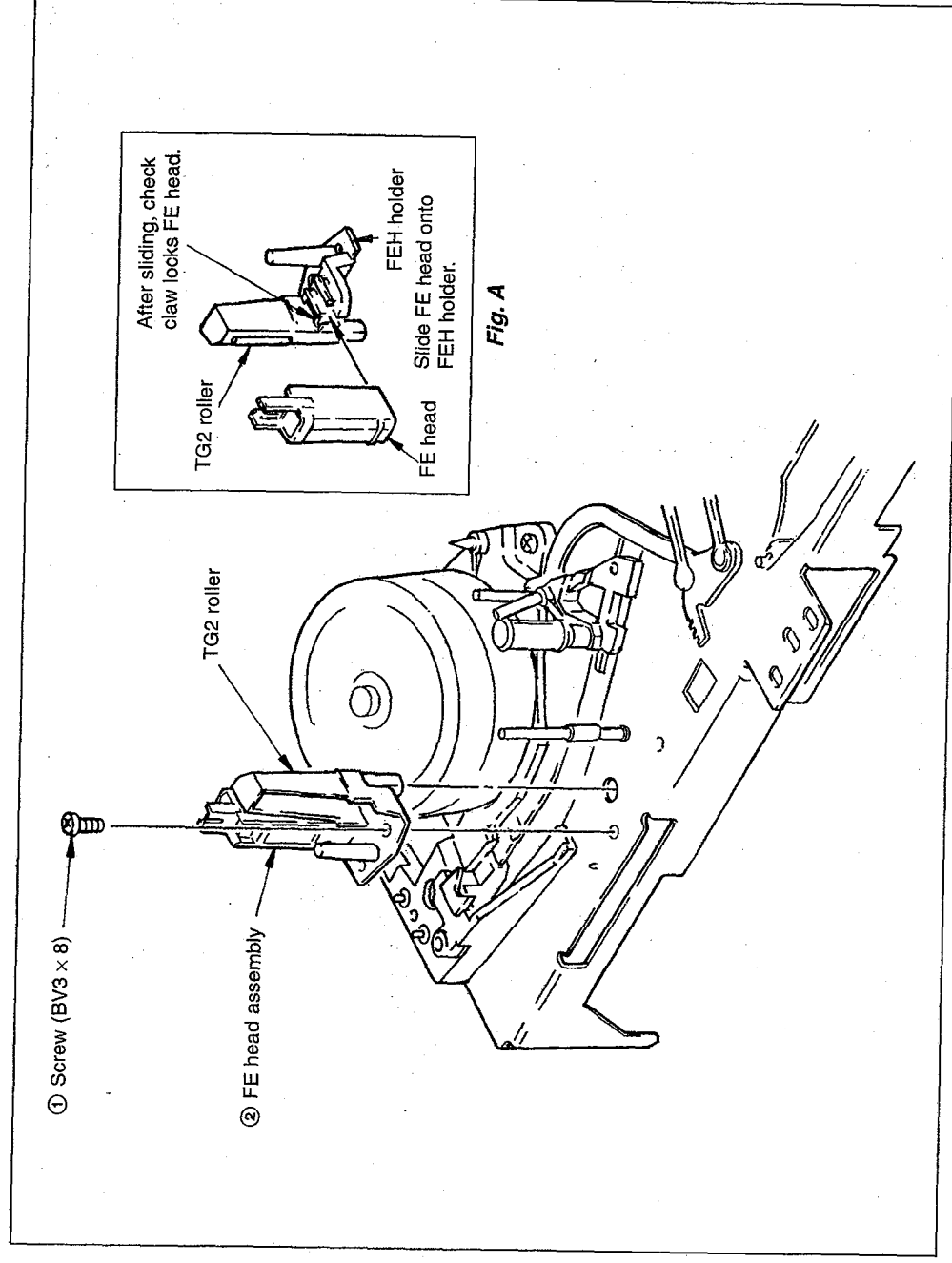


Fig. 3-5

1-4. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Refer to VHS Mechanical Adjustment Manual IV page 17)

- The TG3 and TG6 guide roller assemblies were changed, and therefore Section 3-8 for new type is added.

3-8. TG3, TG6 GUIDE ROLLER ASSEMBLIES (Fig. 3-8)

- 1) TG3 guide roller assembly ① by turning it in the arrow **A** direction.
- 2) Removal the spring ②.
- 3) TG6 guide roller assembly ③ by turning it in the arrow **B** direction.
- 4) Removal the spring ④.

[Note on Mounting]

- Keep clean the surface contacts tape of TG3 and TG6 guide roller assemblies ①, ③.

[Adjustment after Mounting]

- 4-1. Tape path adjustment.

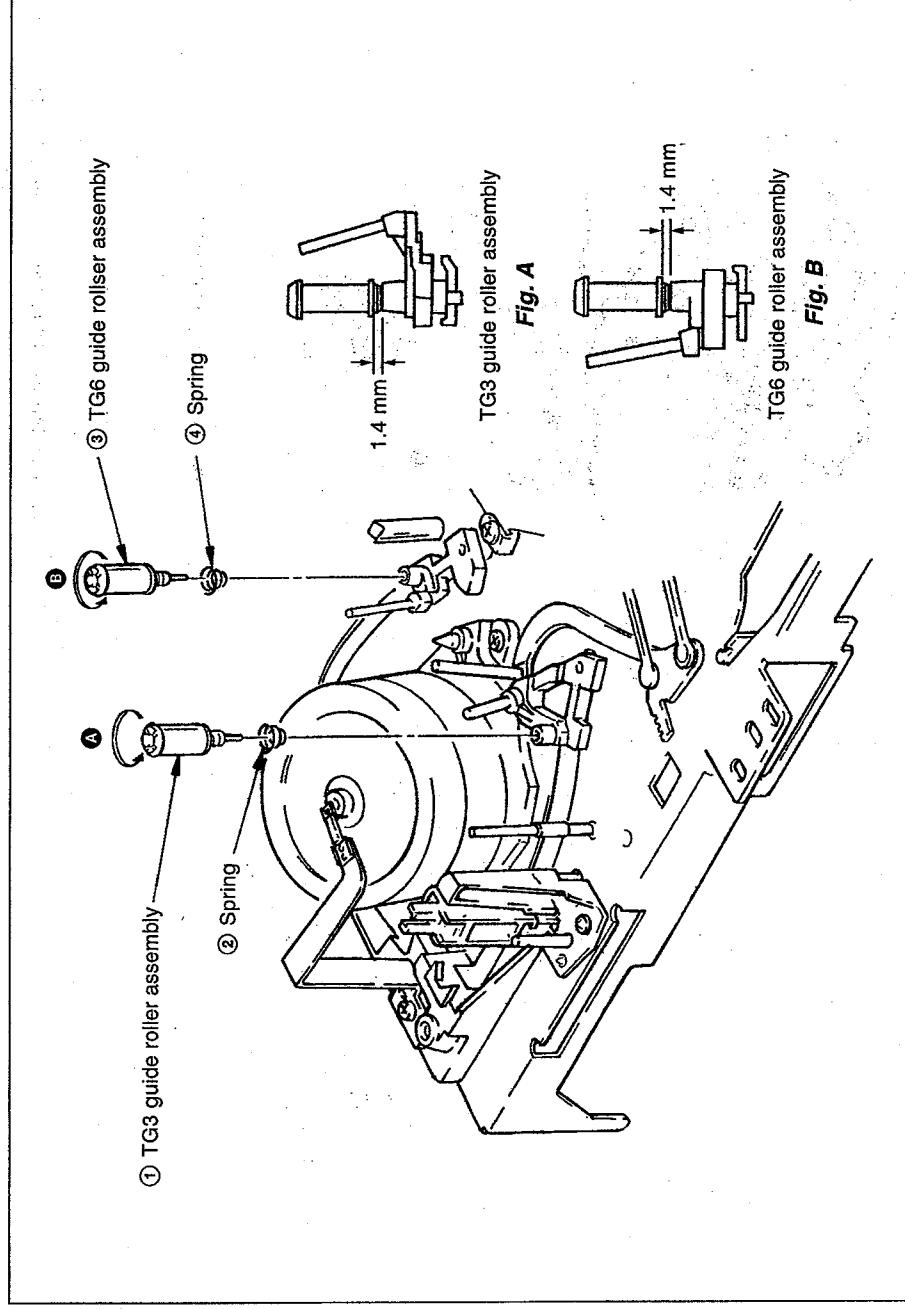


Fig. 3-8

1-5. SHUTTLE T BLOCK AND LOADING GEAR T BLOCK ASSEMBLIES (Refer to VHS Mechanical Adjustment Manual IV page 29)

- The shuttle T block and loading gear T block assemblies were changed, and therefore Section 3-19 for new type is added.

3-19. SHUTTLE T BLOCK AND LOADING GEAR T BLOCK ASSEMBLIES (Fig. 3-21)

- 1) Remove drum assembly and drum base. (Refer to 3-2.)
- 2) Remove timing belt. (Refer to 3-3.)
- 3) Remove CAP brake assembly. (Refer to 3-4.)
- 4) Remove cam motor chassis block assembly. (Refer to 3-18.)
- 5) Remove main slider. (Refer to 3-20.)
- 6) Sliding the shuttle T block assembly ① toward the direction **A**, remove it through the hole **B**.
- 7) Pull out loading gear T block assembly ②.

[Note on Mounting]

- Adjust the phase **C** between loading gear (T) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle T block assembly ①.

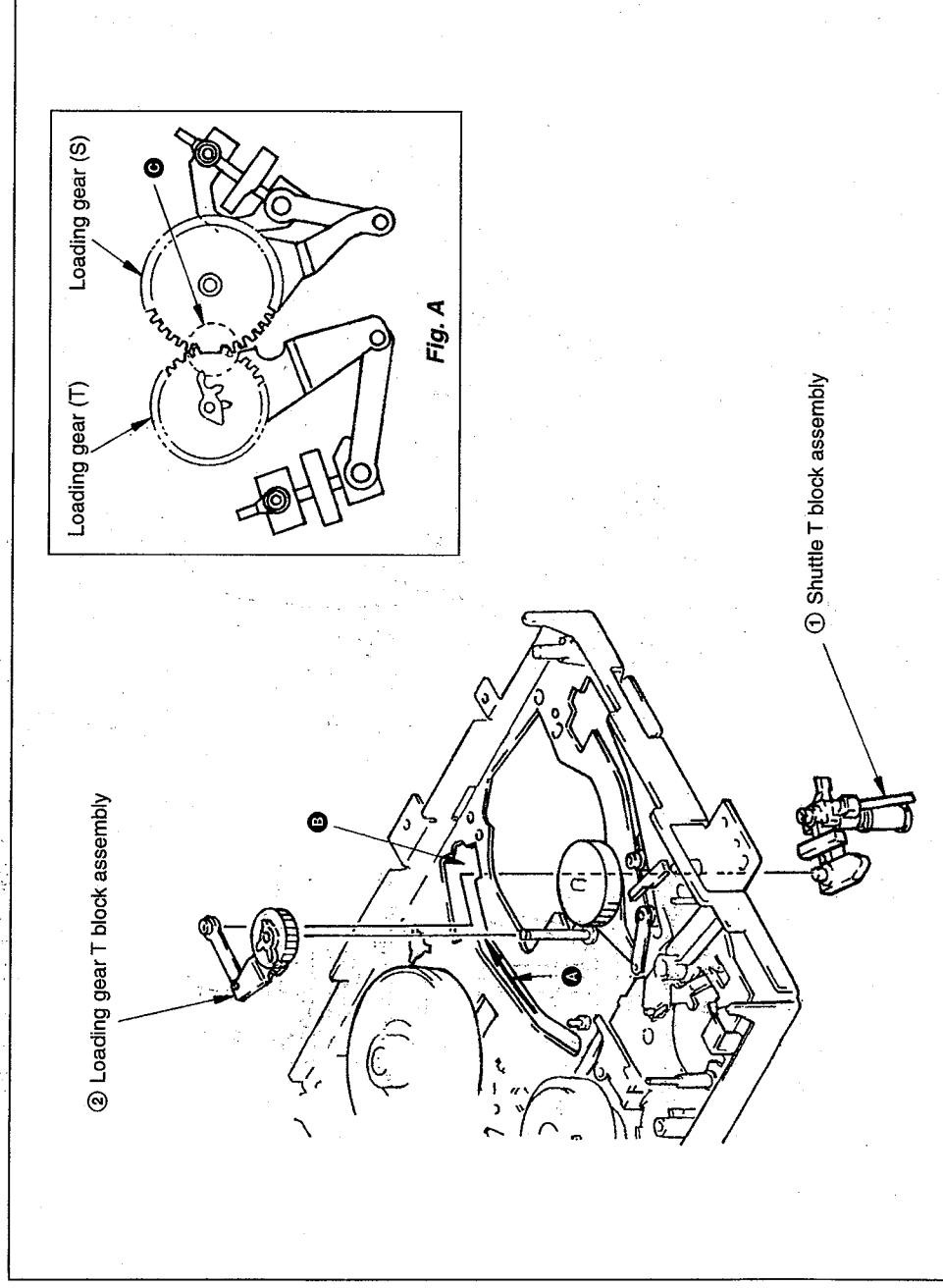


Fig. 3-21

1-6. SHUTTLE S BLOCK AND LOADING GEAR S BLOCK ASSEMBLIES **(Refer to VHS Mechanical Adjustment Manual IV page 30)**

- The shuttle S block and loading gear S block assemblies were changed, and therefore Section 3-20 for new type is added.

3-20. SHUTTLE S BLOCK AND LOADING GEAR S BLOCK ASSEMBLIES **(Fig. 3-22)**

- 1) Remove drum assembly and drum base. (Refer to 3-2.)
- 2) Remove timing belt. (Refer to 3-3.)
- 3) Remove CAP brake assembly. (Refer to 3-4.)
- 4) Remove cam motor chassis block assembly. (Refer to 3-18.)
- 5) Remove main slider. (Refer to 3-20.)
- 6) Sliding the shuttle S block assembly ① toward the direction **A**, remove it through the hole **B**.
- 7) Pull out loading gear S block assembly ②.

[Note on Mounting]

- Adjust the phase **C** between loading gear (S) and loading gear (S). (Fig. A)
- Keep clean the surface contacts tape of shuttle S block assembly ①.

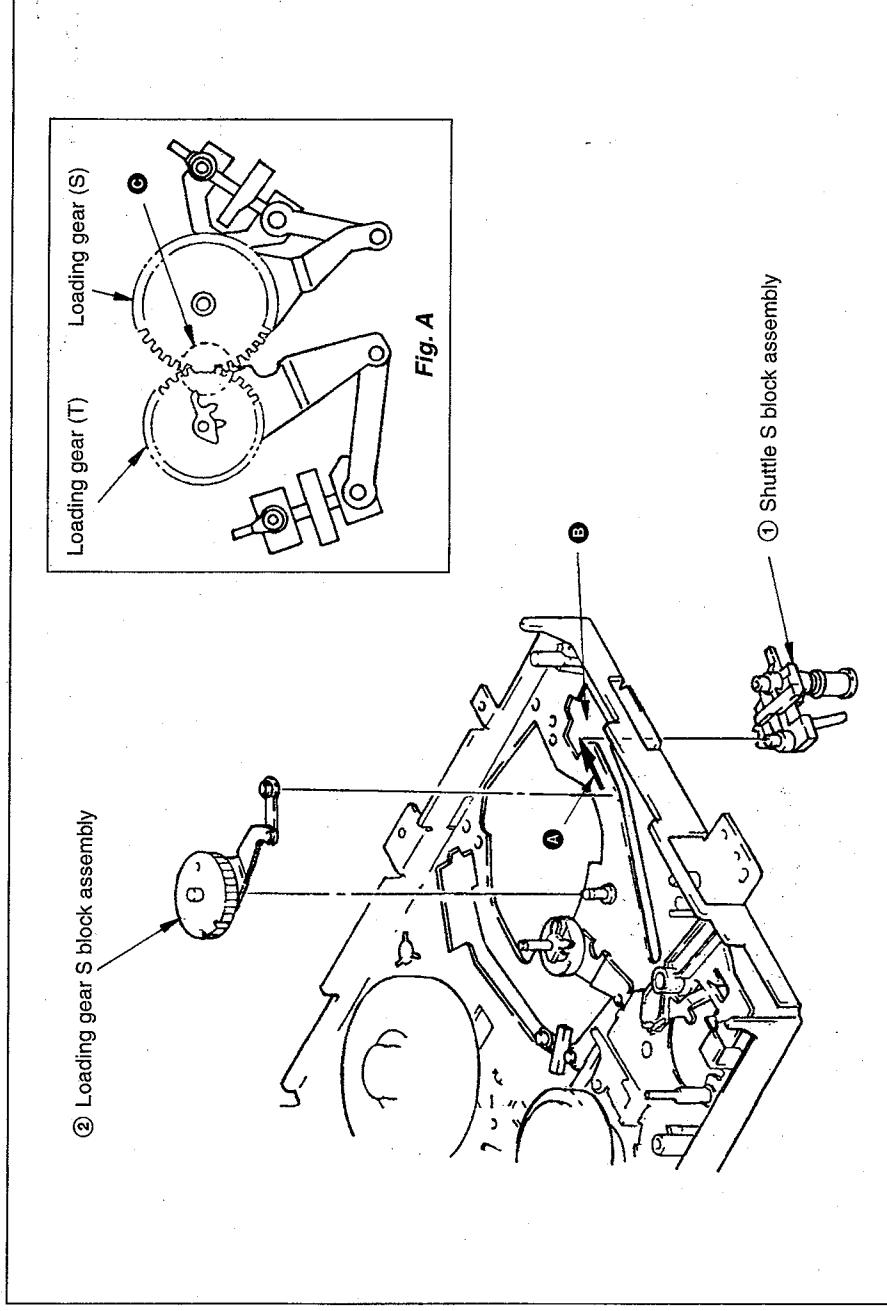


Fig. 3-22

2. ADJUSTING THE MECHANISM USING NEW ALIGNMENT TAPE (KRV-52PL for PAL)

The conventional alignment tape (For PAL) is now replaced with alignment tape KRV-52PL, and the following describes how to align the mechanism using the KRV-52PL. For details on the use of KRV-51P for each model, refer to the service manuals which will be issued in the future.

Name	Parts No.	Remarks
Alignment tape KRV-52PL for PAL	8-192-605-46	For tape path, audio azimuth, and X-value adjustments
Alignment tape KRV-51P for PAL	8-192-605-36	For electrical adjustments (RF, AF, and switching position) and operation check

Contents:

KRV-52PL (PAL)

Time	Video	Audio
20 min.	Recording only at 1 MHz, A-ch. EP mode RF skipping once per 5 frames	4 kHz full tracks

KRV-51P (PAL)

Class	Mode	Time	Video	Audio (HiFi/Normal)
1	SP	7 min.	Color bar	400 Hz
2	SP	3 min.	Mono. scope	400 Hz
3	EP	7 min.	Color bar	400 Hz
4	EP	3 min.	Mono. scope	400 Hz

2-1. HEIGHT ADJUSTMENT OF GUIDE ROLLERS NO.3 AND NO.6

Mode	Playback
Signal	Alignment tape KRV-52PL (For PAL)
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	Height adjustment screw for No. 3 tape guide roller Height adjustment screw for No. 6 tape guide roller

[Adjustment Method]

- 1) Deactivate the automatic tracking control, and set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the  and  tracking control keys, press both the  and  tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking  [AUTO/MANUAL] key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).
- 2) Turn the height adjustment screws of tape guide rollers No. 3 and No. 6 so that the RF output envelope becomes as flat as possible.
- 3) Press the  tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.
- 4) Press the  tracking control key, and check that both the beginning and end of the RF output change together the same in amplitude.

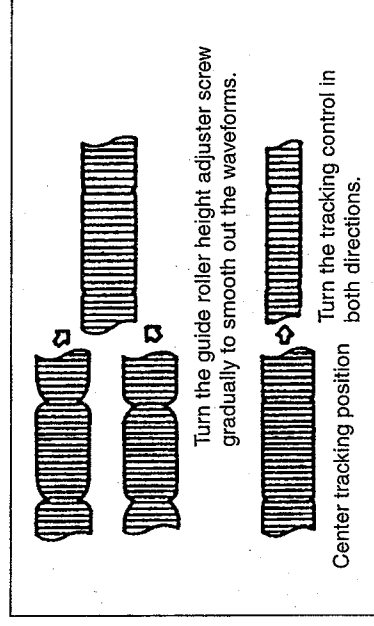


Fig. 2-1

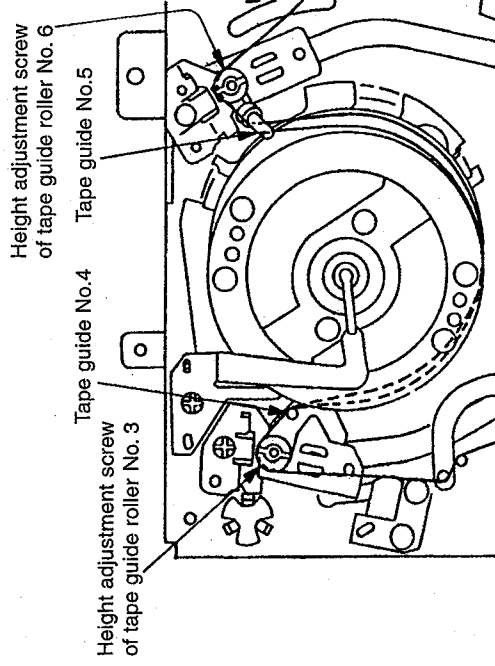


Fig. 2-2

2-2. ACE HEAD ASSEMBLY ADJUSTMENT (ROUGH ADJUSTMENT) (Figs. 2-3 and 2-4)

Purpose: Allows the tape to make even contact with the head for recording and playback of the specified track.

Mode	Playback
Jig	Blank tape
Adjustment locations	Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Mount the ACE head assembly. AT this time, adjust the height so that the height of guide flange No. 7 matches the level of the lower edge of the control head.
- 2) Remove the adjustment tool and load a new tape, then set the unit for playback.
- 3) Check that the tape does not curl or rise up noticeably near the ACE head.
- 4) If the tape curls up or rises noticeably, readjust the tilt adjuster screw and the height adjuster nut.
(The height of the ACE head should be adjusted so that the lower edge of the tape is approx. 0.1 to 0.15 mm from the control head.)
- 5) Perform precision adjustment.

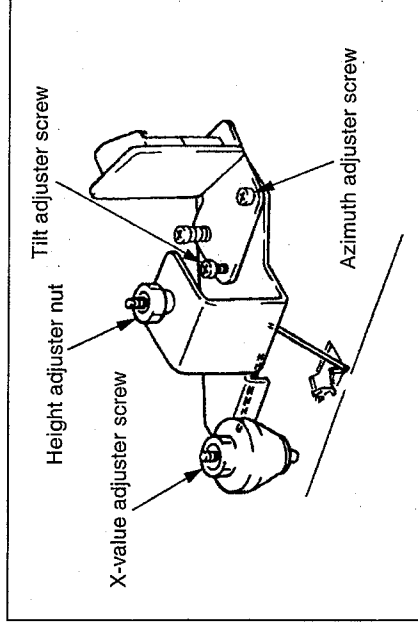


Fig. 2-3

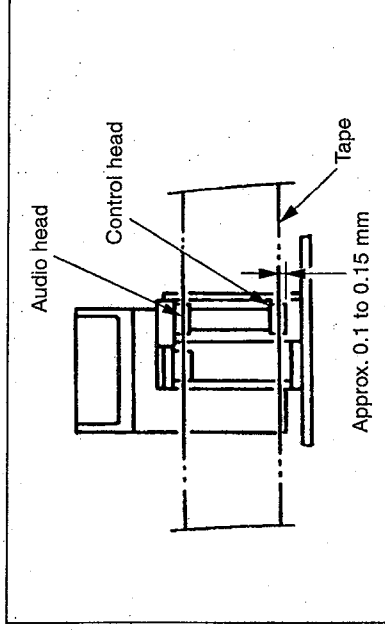


Fig. 2-4

2-3. ACE HEAD ASSEMBLY ADJUSTMENT (PRECISION ADJUSTMENT)

Mode	Playback
Signal	Alignment tape (KRV-52PL 4 kHz) (For PAL)
Measuring instrument	Oscilloscope
Measuring point	Audio output terminal
Adjustment locations	Azimuth adjuster screw, Height adjuster nut, Tilt adjuster screw

[Adjustment Method]

- 1) Adjust the tilt adjuster screw in the FWD or REV mode so that the lower flange of guide No. 7 does not curl up or rise.
- 2) Alternately adjust the azimuth adjuster screw, the height adjuster nut, and the tilt adjuster screw to maintain even audio output at maximum with minimum deviation.

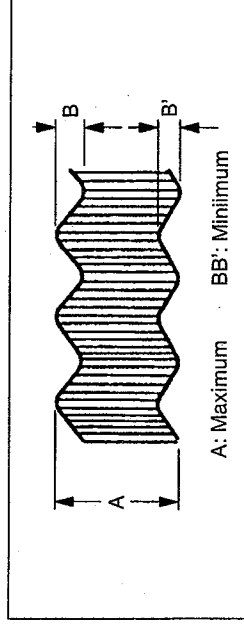


Fig. 2-5

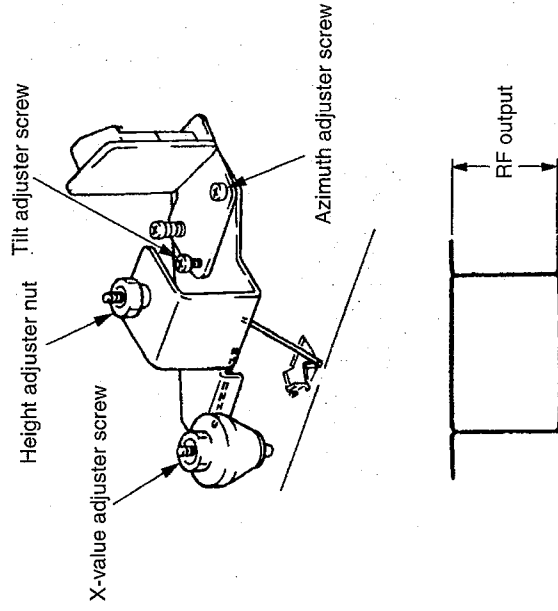
Note: In the adjustment of ACE head assembly (coarse adjustment and fine adjustment), if a azimuth, height and tilt were adjusted, again adjust the height of No. 3 and No. 6 guide rollers.

2-4. X-VALUE ADJUSTMENT

Purpose: To obtain compatibility with other VCRs.

Precaution: Before starting to adjust X-value, set the tracking control at the center position. To set the tracking control at the center position for the VCRs equipped with the  and  tracking control keys, press both the  and  tracking control keys at the same time. For the VCRs not equipped with the tracking control keys, deactivate the automatic tracking control by pressing the tracking  key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

Mode	Playback
Signal	Alignment tape KRV-52PL
Measuring instrument	Oscilloscope TIM/DIV: 2ms Trigger source: CH2 Trigger slope: +
Measuring point	CH-1: Connector PB RF pin for RF PC board check CH-2: Connector RF SWP pin for RF PC board check
Adjustment locations	X-value adjuster screw



RF output shall be maximum at the center position of the tracking control.

Fig. 2-6

[Adjustment Method]

Set the tracking control at the center position. For the VCRs equipped with narrow gap video heads, set the X-value adjustment screw where a maximum RF output is obtained. For the VCRs equipped with wide gap video heads, set the X-value adjustment screw both where a maximum RF output is obtained and where the RF output decreases immediately when the $\blacktriangledown$ tracking control key is pressed.

1. Adjusting X-value

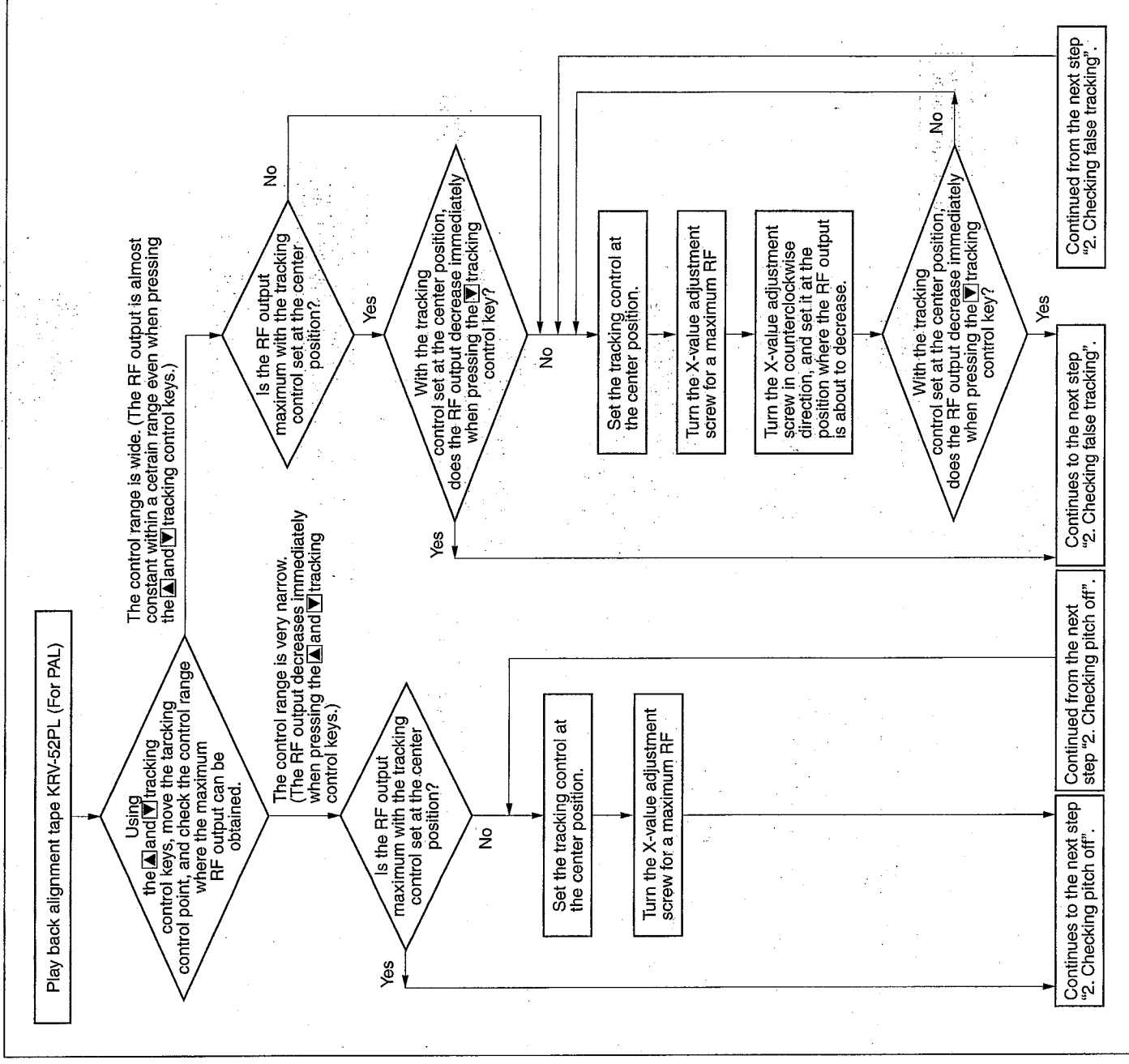


Fig. 2-7

2. Checking false tracking

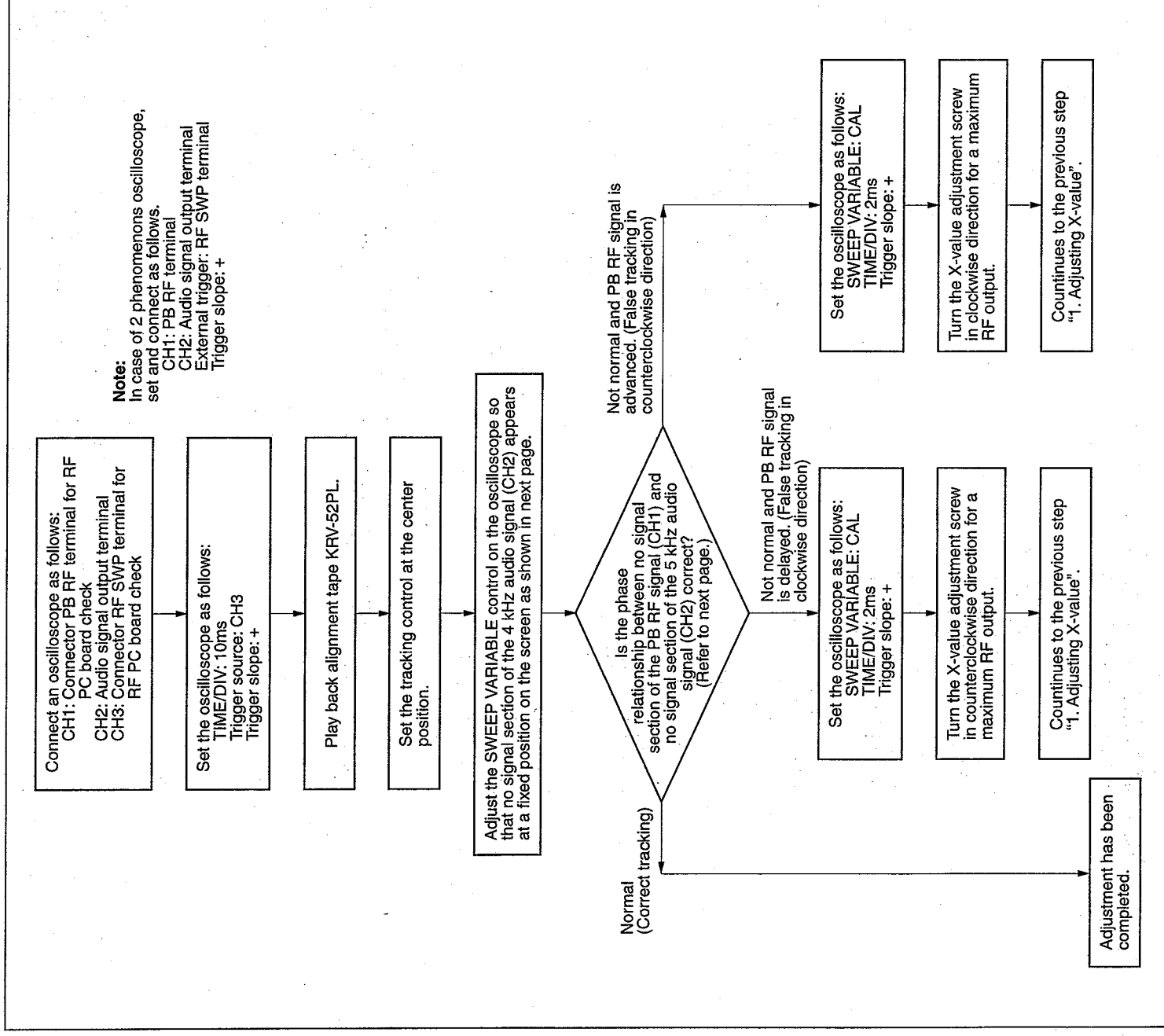


Fig. 2-8

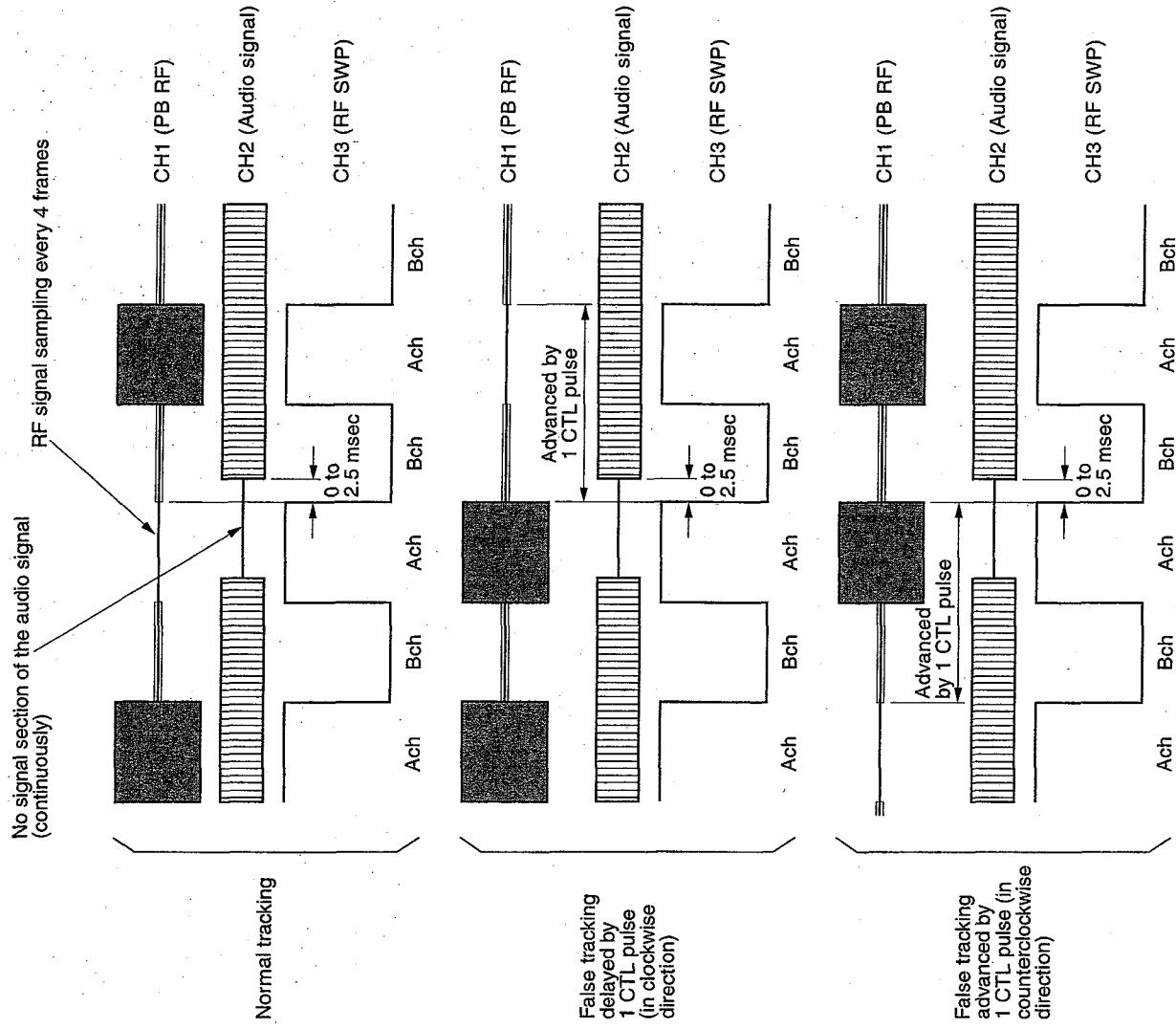


Fig. 2-9

2-5. ADJUSTMENT AFTER REPLACING THE DRUM (VIDEO HEAD)

Purpose: Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum is replaced properly, these deviations are extremely small.

Note 1: Deactivate the automatic tracking control for setting the mechanism in manual tracking control mode.

Note 2: To set the tracking control at the center position, deactivate the automatic tracking control by pressing the tracking [AUTO/MANUAL] key on the remote control unit during threading operation (after a tape is inserted but before the VCR starts playing back the tape).

[Adjustment Method]

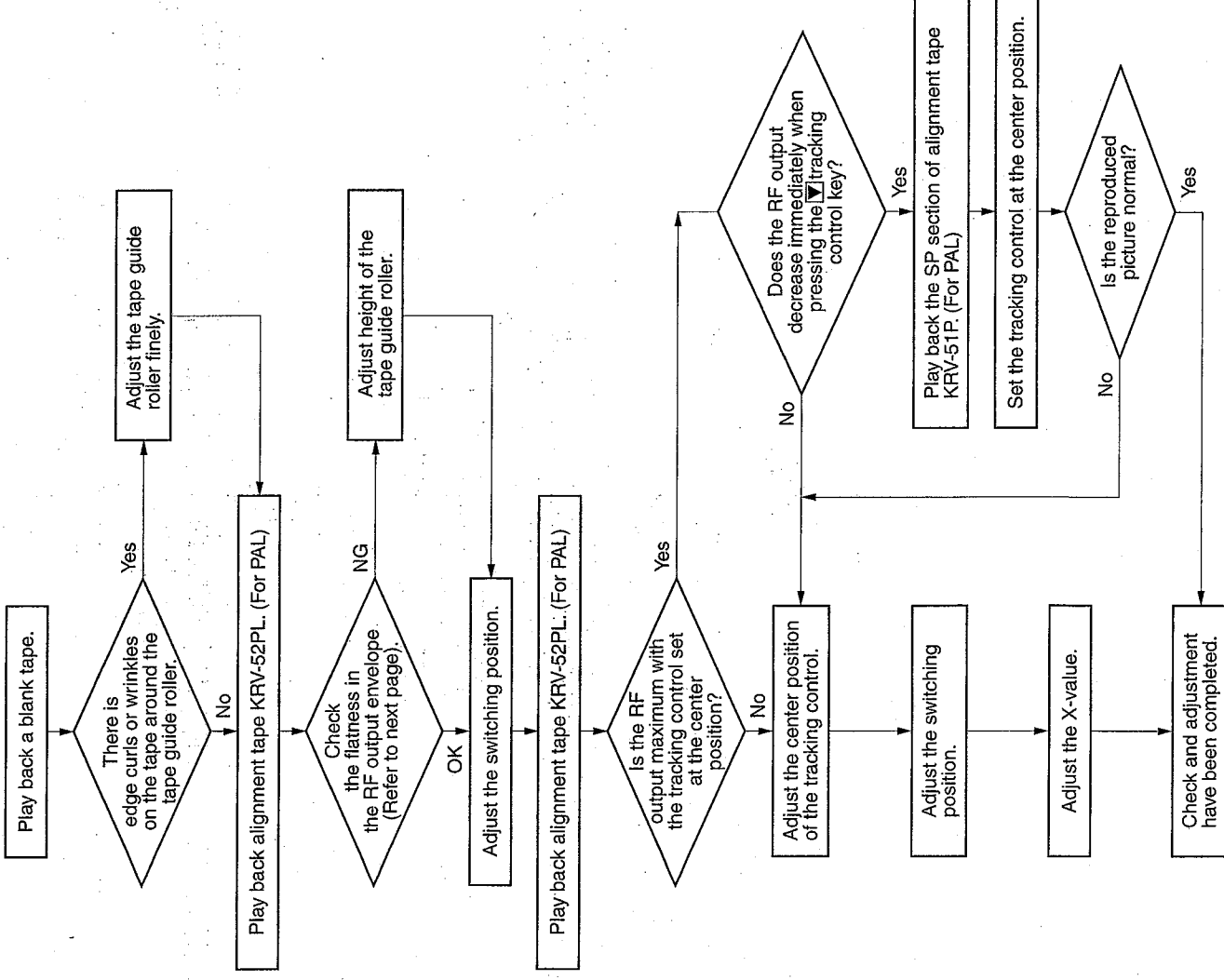
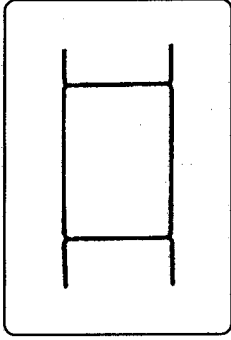


Fig. 2-10

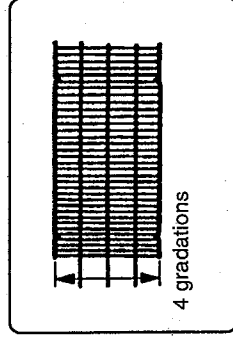
Mode	Playback
Signal	Alignment tape KRV-52PL (For PAL), blank tape
Measuring instrument	Oscilloscope
Measuring point	CH-1: Connector PB RF pin for RF PC board check. CH-2: Connector RF SWP pin for RF PC board check.
Adjustment locations	Guide roller (Refer to 2-1.) Switching position (Refer to the Service Manual) X-value (Refer to 2-3.)

[Checking the evenness and fluctuation of the RF output]

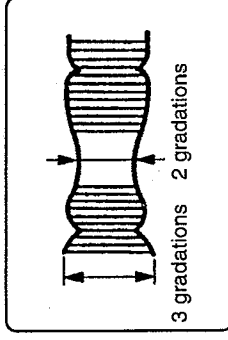
- 1) Set the RF output to the maximum level using the tracking buttons.



- 2) Perform fine adjustment of the voltage level range of the oscilloscope, then adjust the RF output deviation to within 4 gradations.



- 3) Press the tracking buttons and adjust the maximum amplitude of the RF output to within 3 gradations.
- 4) AT this time, check if the minimum amplitude is more than 2 gradations.



- 5) Check that the RF output fluctuation between minimum and maximum levels is within 13%.

Fig. 2-11



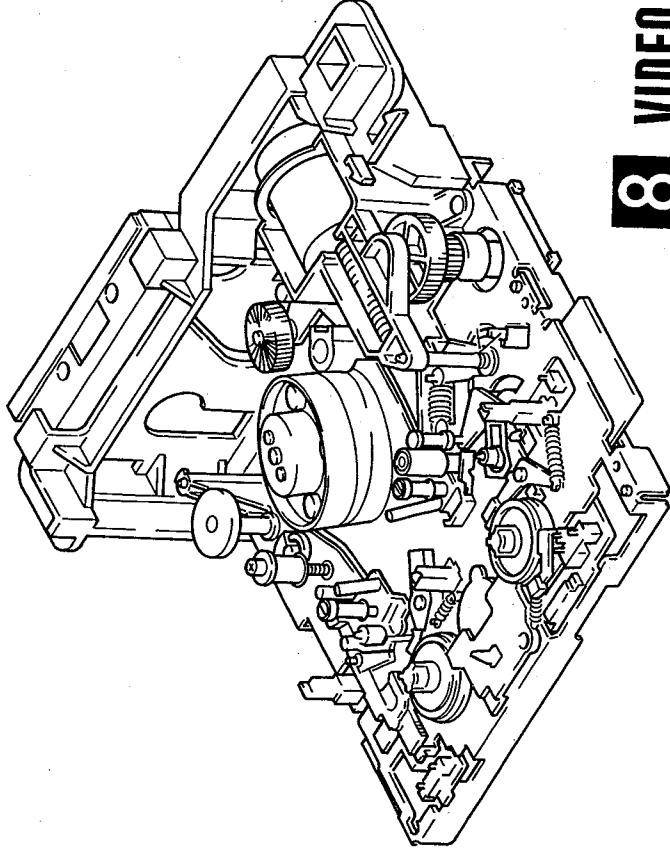
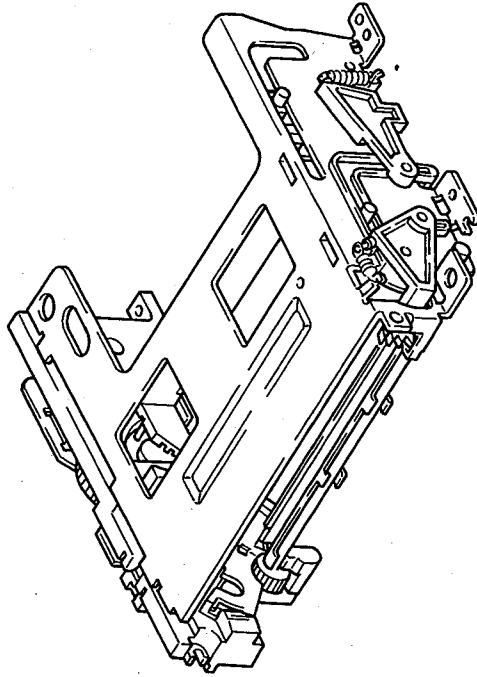
V13000

8 mm Video MECHANICAL ADJUSTMENT MANUAL V

F MECHANISM

Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER
SONY®

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1. MAIN FEATURES

The mechanism developed exclusively for the 8mm video provides the following features.

1. Faster rewind time than U mechanism.
4 times high speed. (about 1 minute in case of P120 cassette.)
2. Jog shuttle supporting by addition of forced swing mechanism.
3. High speed start on Picture mechanism.
Stop → playback about 0.8 sec.
4. Head clogging prevention by adoption of new cleaning roller.
5. Reduction of the number of parts. (about 40 parts less than U mechanism.)
6. FL capstan motor drive.

2. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.

Mechanical adjustment is done in the **EJECT** mode. (To select the **EJECT** mode, refer to "2-3, Handling of Mode Selector II".)

2-1. FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 1)

1. Removal

- 1) Select the **EJECT** mode.
- 2) Remove three screws ① and remove the FL cassette compartment ② toward the arrow.

2. Mounting

- 1) Select the **EJECT** mode.
- 2) Mount the FL cassette compartment ② with its tab **A** engaged with the hole **B** in mechanical chassis.
- 3) Tighten three screws ①.

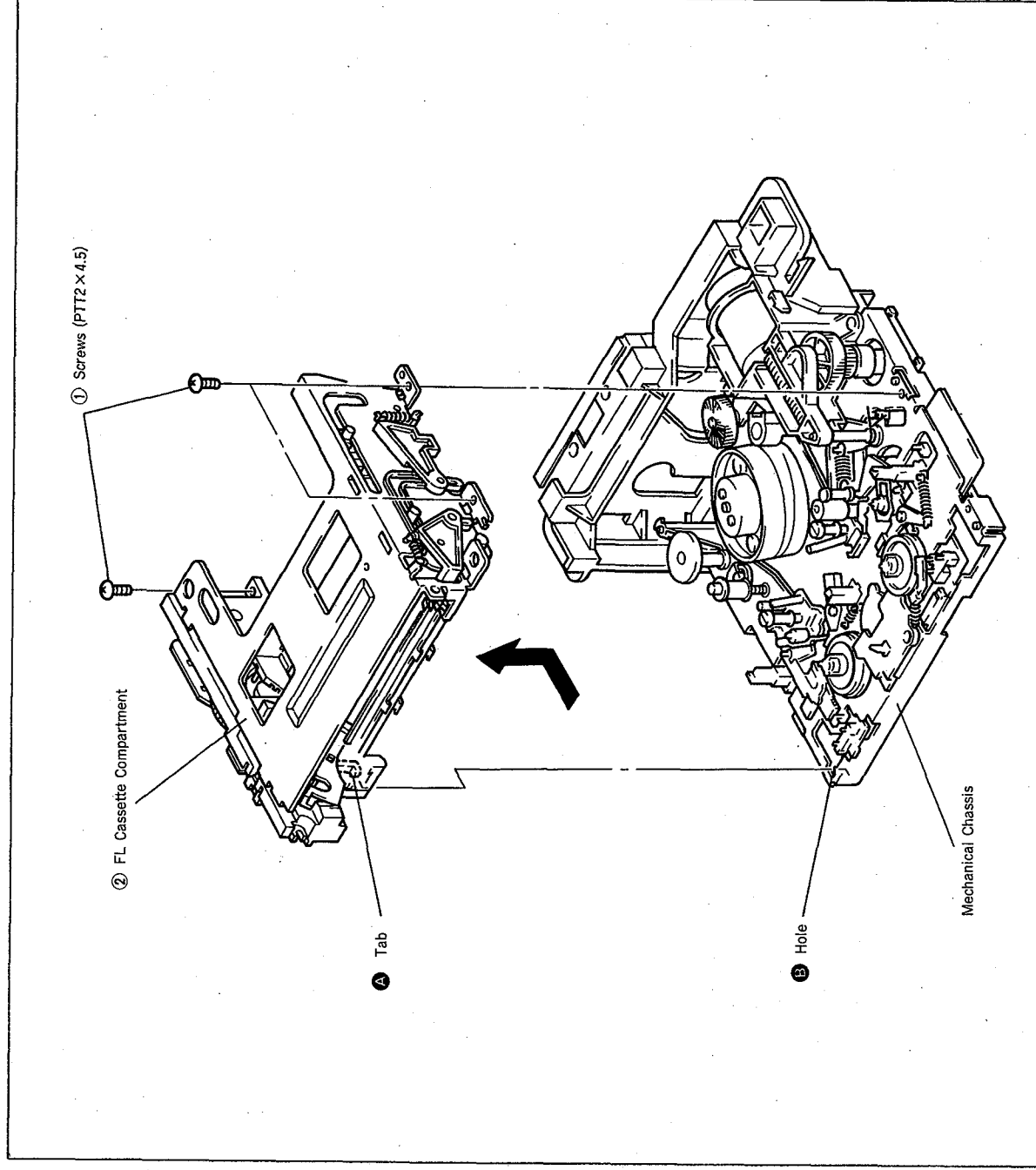


Fig. 1

2-2. OPERATION WITH FL CASSETTE COMPARTMENT ASSEMBLY REMOVED (Fig. 2)

2-2-1. Activating Loading

- 1) Referring to the Service Guide, supply the power with the cabinet removed.
- 2) Cover the LED ① with an opaque cap ②.
- 3) Press the cassette down switch ③ three times.

2-2-2. Activating Play Status

- 1) Perform each step in 2-2-1. Activating Loading.
- 2) Press the PLAY button while keeping the cassette down switch pressed.

2-2-3. Activating Ejection

- 1) Press the EJECT button.

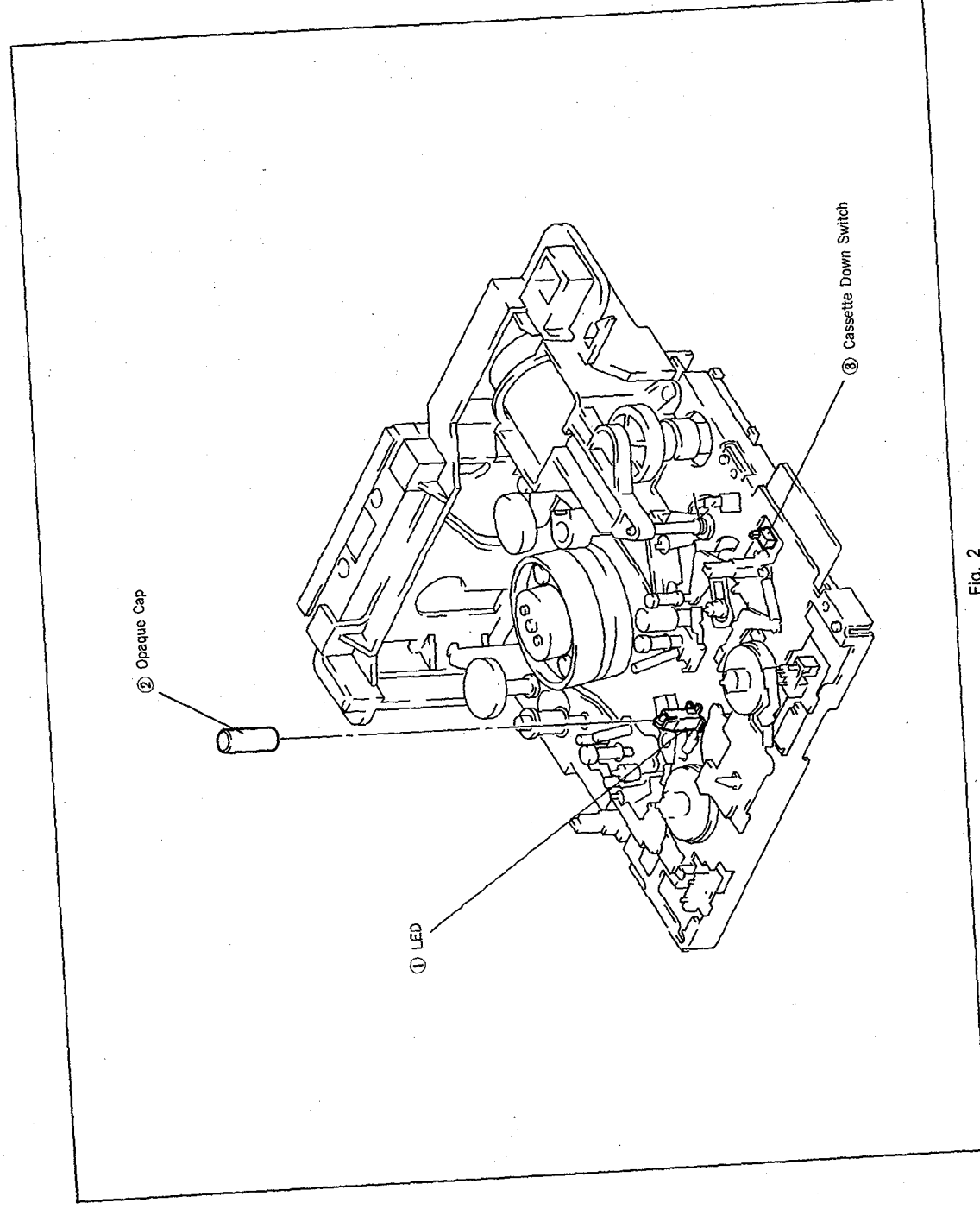


Fig. 2

2-3. HANDLING OF MODE SELECTOR II

2-3-1. General

The mode selector is used as a mechanism drive tool to help maintenance of various mechanical decks, and it provides the following functions.

1. MANUAL test

In this mode, the motor is driven only during the time that the switch is pressed, so that the operator can control the motor freely.

2. STEP test

In this mode, the motor is driven from the present status attained from sensor until the status changes to another status, so that the operator can confirm every operations.

3. AUTO test

This mode checks if the mechanism operates normally following the status change table registered to each mechanical deck through a sequence of operation in all statuses of the mechanism. If it detects a faulty status change during operation, it displays "NG" and stops operation.

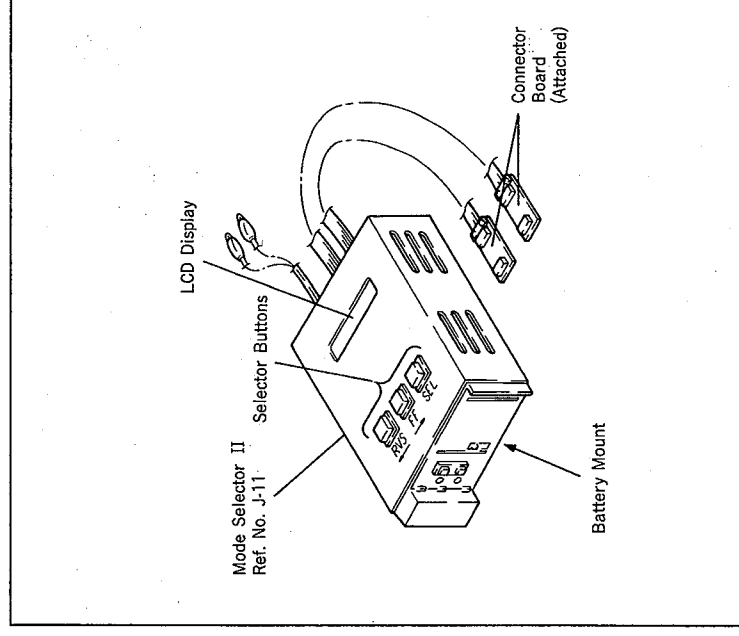


Fig. 3

MODE SELECTOR II (J-6082-282-A) CONNECTION

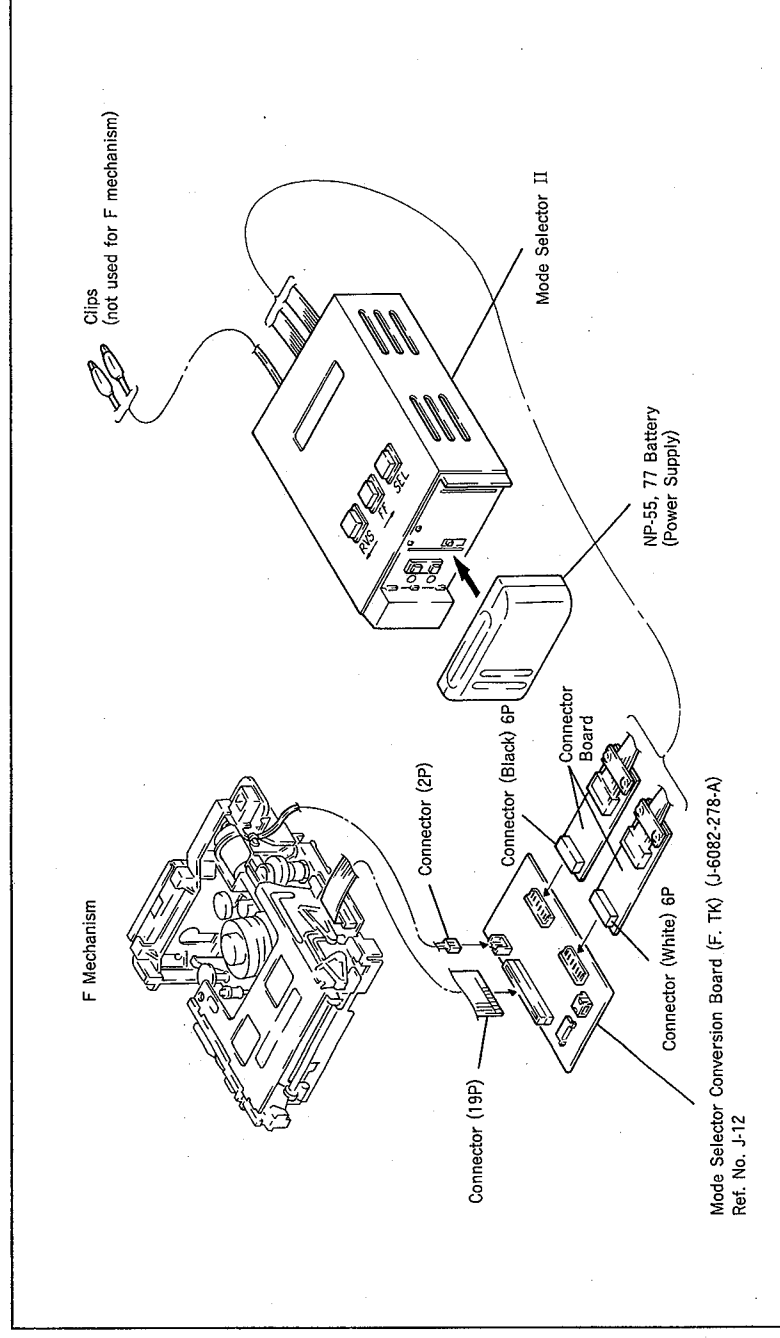
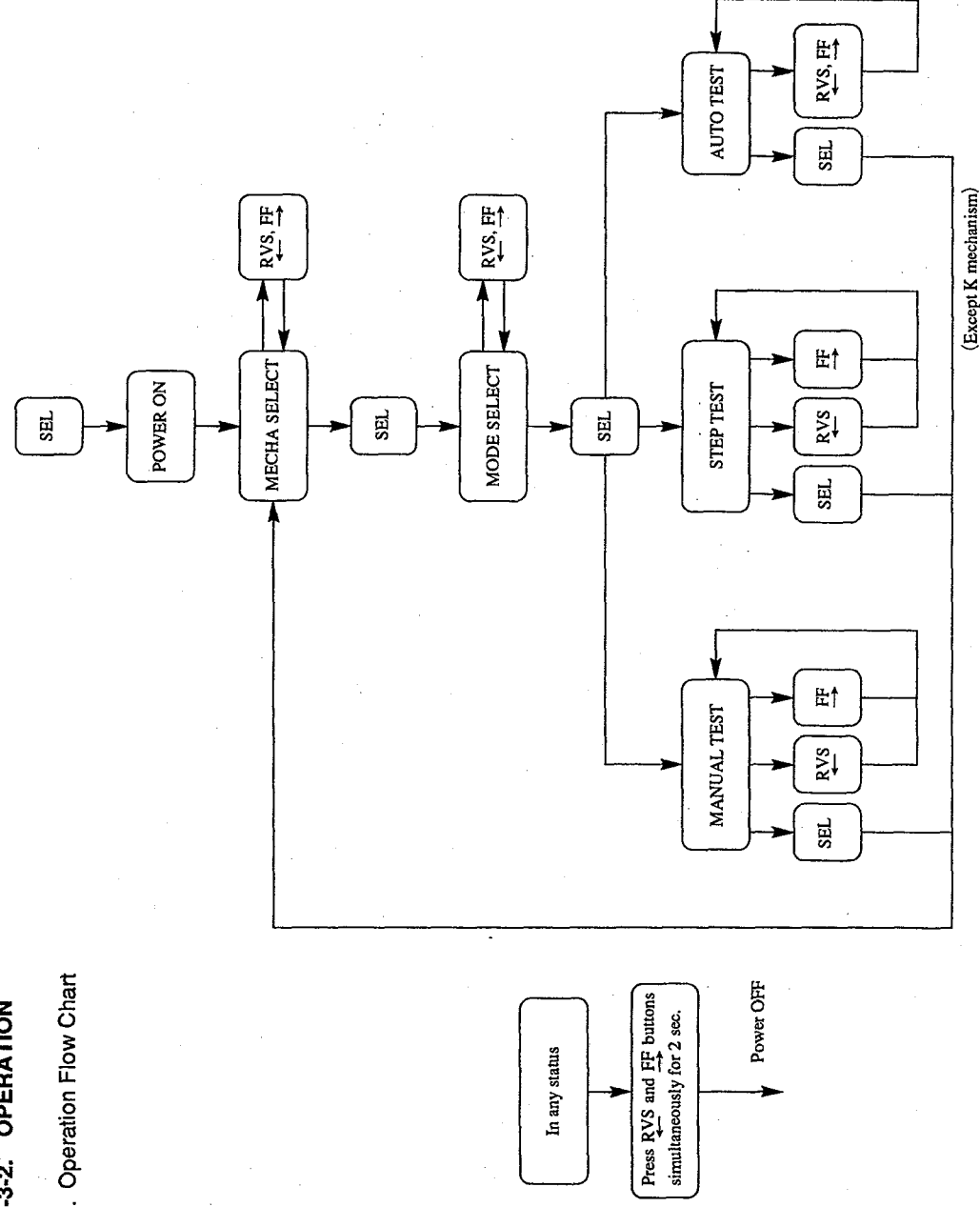


Fig. 4

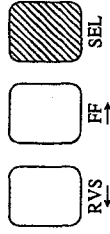
2-3-2. OPERATION

1. Operation Flow Chart



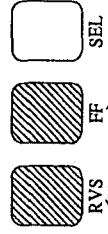
2. Mode Selector II power ON

Press the SEL button to turn on the power supply.



3. Mode Selector II power OFF

At the power ON, press $\overleftarrow{\text{RVS}}$ and $\overrightarrow{\text{FF}}$ buttons simultaneously for more than 2 seconds to turn off the power supply.



4. Mechanism selection

The "MECHA SELECT" is displayed on LCD immediately after the power supply is turned on. Call the desired mechanism by pressing the $\overleftarrow{\text{RVS}}$ or $\overrightarrow{\text{FF}}$ button, and press the SEL button. Thus, the mechanism has been selected. (Fig. 5-1 indicates F mechanism.)

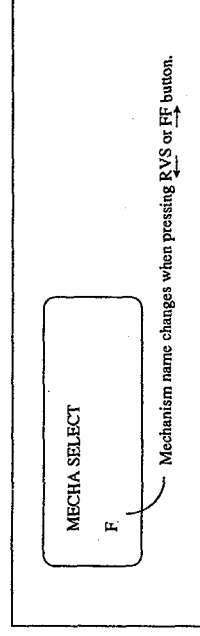


Fig. 5-1

5. Mode selection

Select the test mode "MANUAL", "STEP" or "AUTO" to be executed.
Call the desired mode by pressing the RVS or FF button, and press the SEL button. Thus, the mode has been selected.

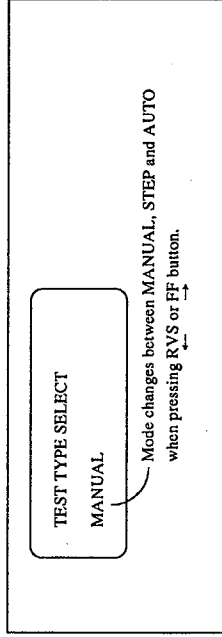


Fig. 5-2

6. MANUAL test

This mode drives the motor only during the time that the RVS or FF button is pressed.

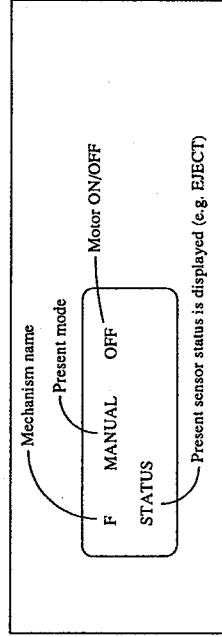


Fig. 5-3

7. STEP test

This mode drives the motor from the present status until the status changes in the direction selected with RVS or FF button.

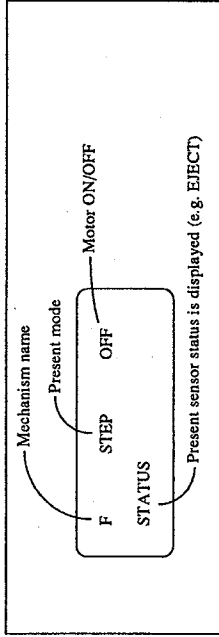


Fig. 5-4

8. AUTO test

This mode checks if the operation sequence stored for each mechanical deck is normal, and if the signals from sensors that execute a sequence of operation meet the stored sequence. The same operation is executed if either RVS or FF is pressed.

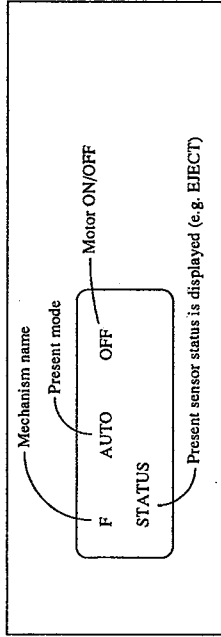


Fig. 5-5

Mechanism status (position) change sequence

After selection of mechanism, if either MANUAL or STEP mode is selected and the RVS or FF button is pressed, the mechanism status (position) can be designated. (Designated status is displayed at STATUS position.)

EJECT ↔ UNLOAD END ↔ STOP 1 ↔ HIGH
SPEED REW ↔ DEW ↔ LOAD END ↔
STOP 2 ↔ FWD. P ↔ RVS. P

MD name					F mechanism
Code					
A	B	C	D		
0	1	1	1	1	EJECT
0	0	1	1	2	UNLOAD END
1	0	1	0	3	STOP 1
1	0	1	1	4	HIGH SPEED REW
1	0	0	0	5	DEW
1	1	0	0	6	
1	1	1	0	7	LOAD END
0	1	1	0	8	STOP 2
0	1	0	0	9	
1	1	0	1	10	FWD. P/FWD
0	0	0	1	11	RVS. P/RVS
1	0	0	1	12	

9. Battery alarm display

In case of low voltage of battery, which is a power supply of Mode Selector, the alarm message is displayed (not synchronous display).

In such a case, no operation is available, requiring battery replacement.

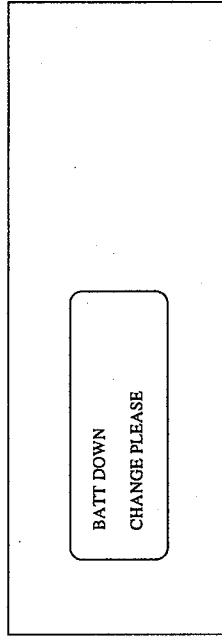


Fig. 5-6

3. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regardless of the length of use.

3-1. CLEANING OF ROTARY DRUM ASSEMBLY

- 1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquid (Ref. No. J-1) to the rotary drum assembly. Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a perpendicular direction to the it. make sure to follow the instructions above for cleaning the rotarydrum assembly.

3-2. CLEANING OF TAPE PATH (Fig.6)

- 1) In the **[EJECT]** mode, clean the tape running system (TG1, 2, 3, 4, 5, 6, 7, pinch roller, and capstan shaft) and the lower drum, using a super fine applicator (Ref. No. J - 3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the super fine applicator (Ref. No. J - 3).

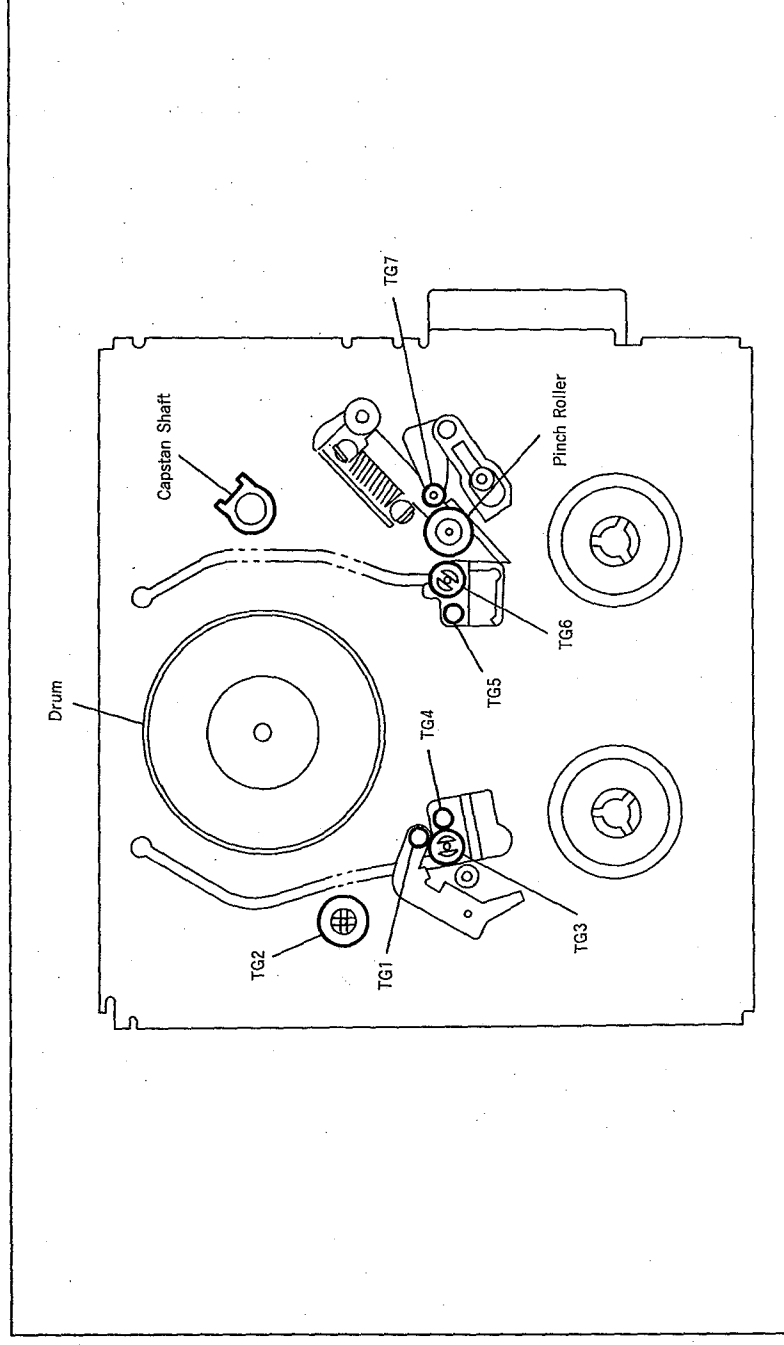


Fig. 6

3-3. PERIODIC CHECK ITEMS

Location of Maintenance and check		Hours of Use (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Tape trans- portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Timing belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-953-986-01 3-954-079-01
	Timing belt (FL)	—	◎	—	◎	—	◎	—	◎	—	◎	Be absolutely careful not to get oil on the tape path surface.
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Relay pulley shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
Performance Confirmation	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	X-3942-946-1
	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD, RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
		—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

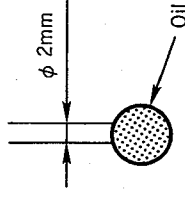
Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different viscosity, etc., it may cause troubles.)

Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT-68)

- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

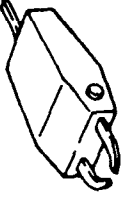
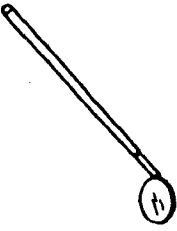
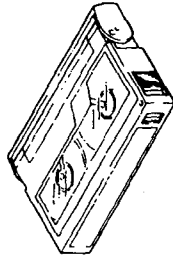
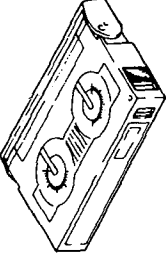
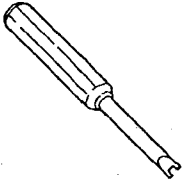
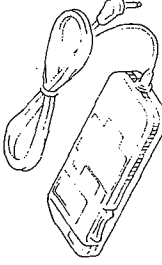
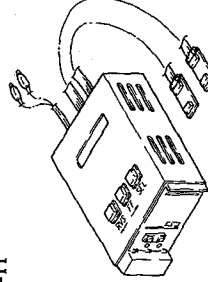
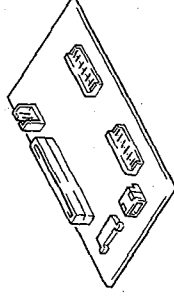
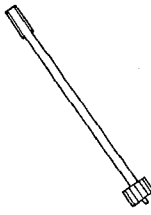


3-4. SERVICE JIGS LIST

Ref. No.	Name	Part No.	Fixture No.	Usage and Others
J-1	Cleaning fluid	Y-2031-001-0		
J-2	Chamois cloth	2-034-697-00		
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)			
J-4	Head degausser	Widely available		
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-INP) PAL (WR5-ICP)	8-967-995-02 8-967-995-07		Tape path
J-7	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-8	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-9	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-10	Adjusting remote controller (Modified RM-95)	J-6082-053-B		Tape path (Setting of PATH mode)
J-11	Mode selector II	J-6082-282-A		For all models
J-12	Mode selector conversion board (F, TK)	J-6082-278-A		
J-13	FWD B.T. adjusting driver chip	J-6082-187-A		

Other equipment • Oscilloscope

• Analog tester (20 kΩ)

J-1		J-2		J-3		J-4	
J-5		J-6		J-7		J-8	 (Attached to the maintenance rotary upper drum)
J-9		J-10		J-11		J-12	
J-13							

4-2. IMPEDANCE ROLLER (Fig. 8)

1. Removal

- 1) Referring to 2-1, remove the FL cassette compartment assembly.
- 2) Referring to 4-1, remove the RP block.
- 3) Remove a tension coil spring ①.
- 4) Disengage a claw **A** and remove the impedance roller base assembly ②.
- 5) Disengage a claw **B** and remove the impedance roller ③.

2. Mounting

- 1) Mount the impedance roller ③, then the impedance roller base assembly ②.
- 2) Attach a tension coil spring ①.
- 3) Referring to 4-1, mount the RP block.
- 4) Referring to 2-1, mount the FL cassette compartment assembly.

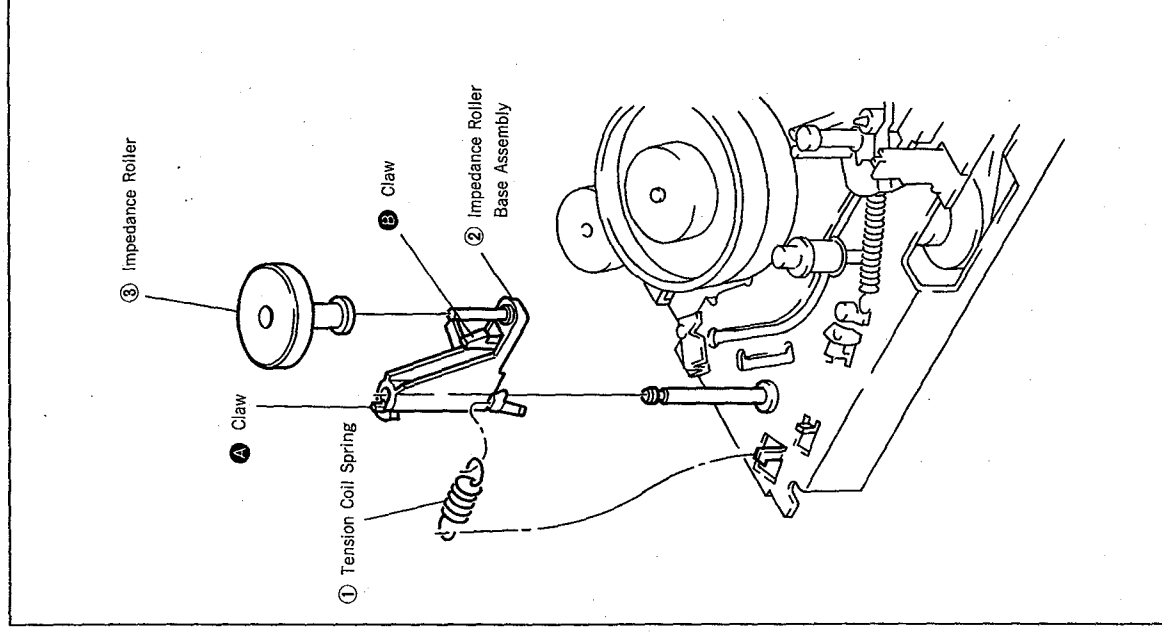


Fig. 8

4-3. HC ROLLER ASSEMBLY (Fig. 9)

1. Removal

- 1) Referring to 4-1, remove the RP block.
- 2) Disengage a claw **A** and remove the HC arm assembly ①.
- 3) Remove a lock washer ②, then the HC roller assembly ③.

2. Mounting

- 1) Mount the HC roller assembly ③ and fix with a lock washer ②.
- 2) Mount the HC arm assembly ①.
- 3) Referring to 4-1, mount the RP block.

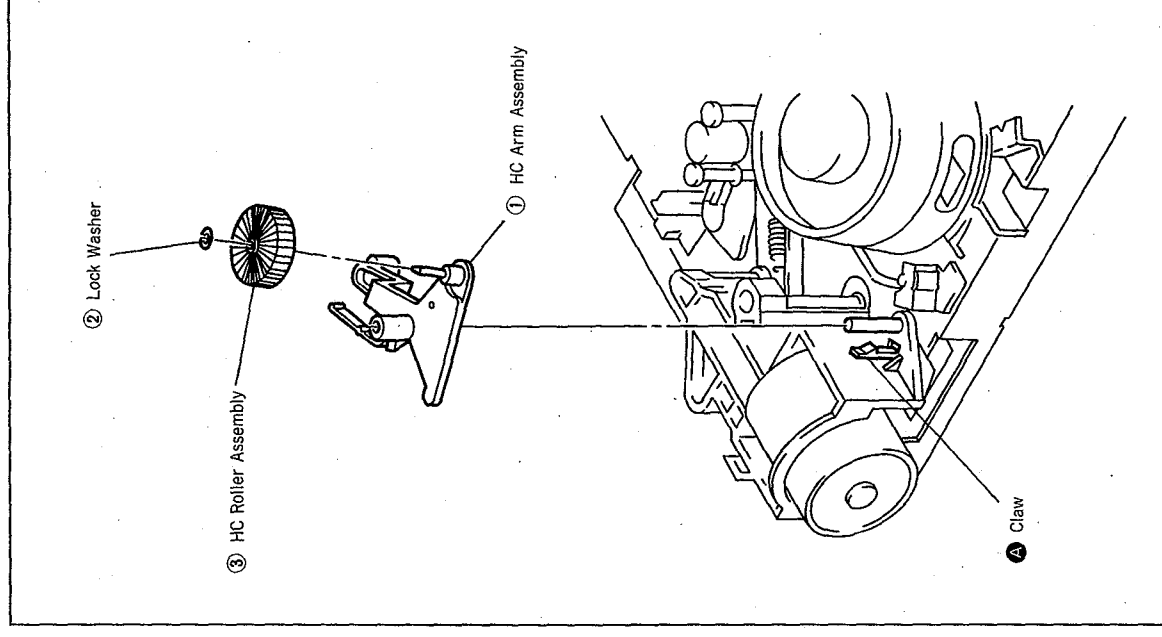


Fig. 9

4-4. PENDULUM BASE ASSEMBLY AND SOFT BRAKE ASSEMBLY (T) (Fig. 10)

1. Removal

- 1) Referring to 2-1, remove the FL cassette compartment assembly.
- 2) Remove a tension coil spring ①.
- 3) Disengage a claw **A** and remove the soft brake (T) assembly ②.
- 4) Remove two screws ③, then the reel unlock plate ④.
- 5) Remove the pendulum base assembly ⑤.

2. Mounting

- 1) Mount the pendulum base assembly ⑤ with its shaft **B** inserted in the **C** of pendulum forcing arm.
- 2) Mount the reel unlock plate ④ and tighten two screws (3).
- 3) Mount the soft brake (T) assembly ② and attach a tension coil spring ①.
- 4) Referring to 2-1, mount the FL cassette compartment assembly.

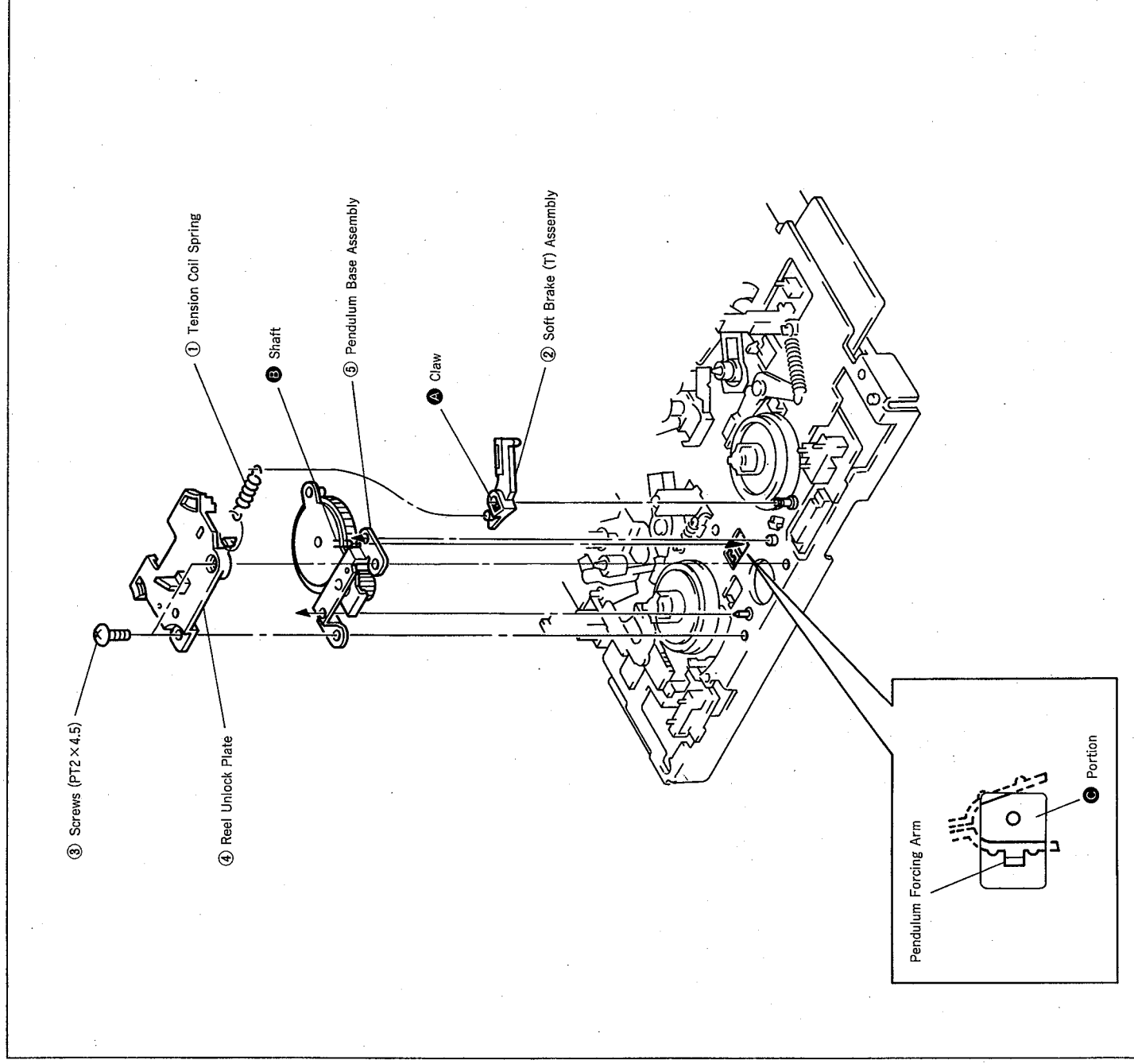


Fig. 10

4-5. BRAKE (S) ARM AND BRAKE (T) ARM ASSEMBLY (Fig. 11)

1. Removal

- 1) Referring to 2-1, remove the FL cassette compartment assembly.
- 2) Remove a tension coil spring ①.
- 3) Disengage a claw ④ and remove the brake (S) arm ②.
- 4) Remove a tension coil spring ③.
- 5) Remove a lock washer 1.5 ④, then the brake (T) arm assembly ⑤.

2. Mounting

- 1) Mount the brake (T) arm assembly ⑤ with its shaft inserted into a hole ⑥ in mechanical chassis.
- 2) Attach a lock washer ④.
- 3) Attach a tension coil spring ③.
- 4) Insert the shaft ③ of brake (S) arm ② into a groove ⑦ of slide plate, and the shaft ⑥ of brake ⑥ of drive lever into a hole ⑥ in brake (S) arm respectively.
- 5) Attach a tension spring ①.
- 6) Referring to 2-1, mount the FL cassette compartment assembly.

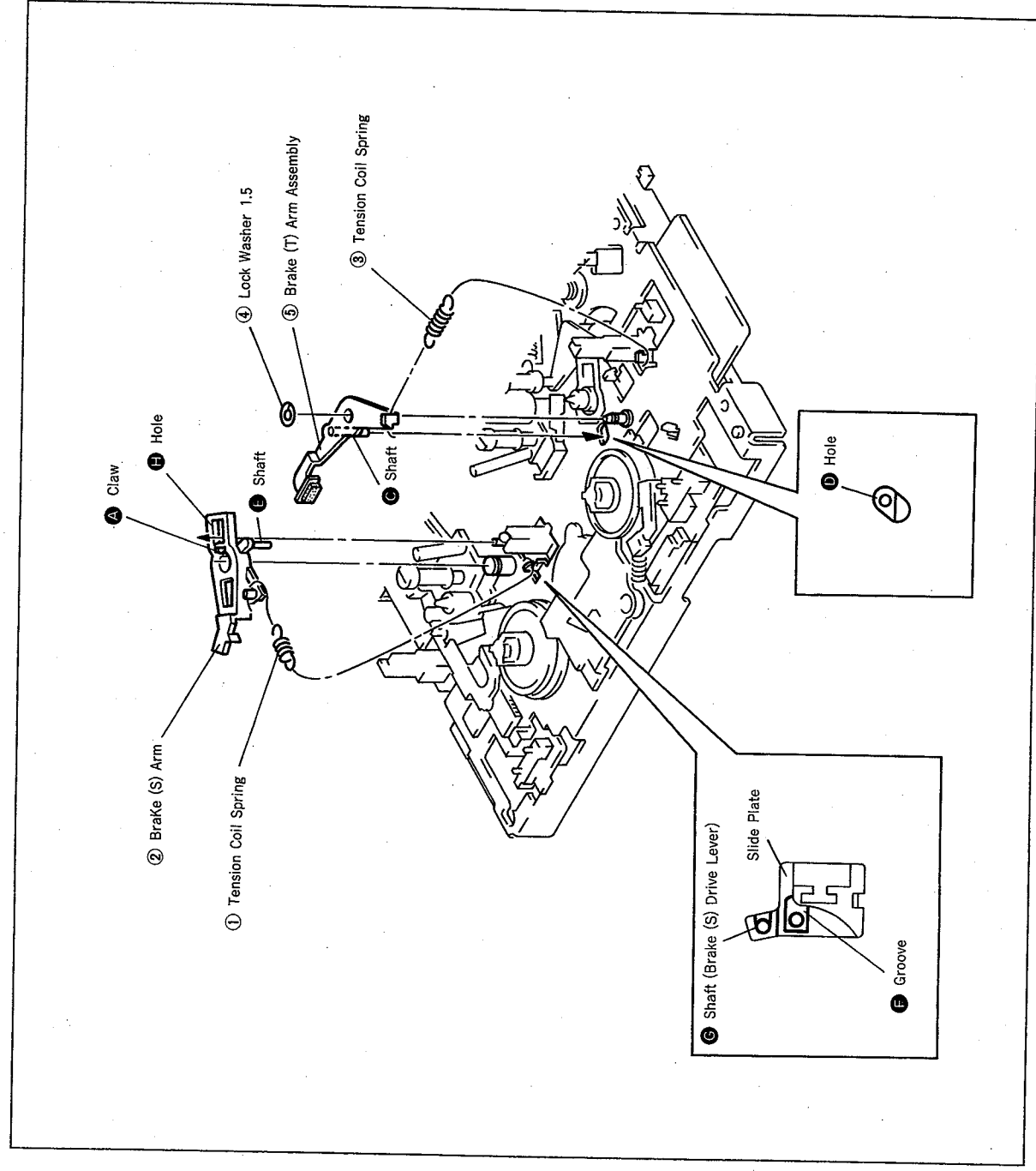


Fig. 11

4-6. TENSION REGULATOR ASSEMBLY, REEL TABLE (S) ASSEMBLY AND REEL TABLE (T) ASSEMBLY (Fig. 12)

1. Removal

- 1) Referring to 2-1, remove the FL cassette compartment assembly.
- 2) Referring to 4-5, remove the brake (S) arm and brake (T) arm assembly.
- 3) Remove a tension coil spring ①.
- 4) Remove a screw ②, then the tension regulator band assembly ③ and the tension regulator assembly ④.

Note : Do not twist or bend, or do not touch the felt surface when removing the tension regulator band assembly.

- 5) Remove the reel table (S) assembly ⑤ and the reel table (T) assembly ⑥.

2. Mounting

- 1) Mount the reel table (S) assembly ⑤ and the reel table (T) assembly ⑥.
- 2) Mount the tension regulator assembly ④ with its shafts **A**, **B** inserted into holes **C**, **D** in chassis respectively.
- 3) Wind the tension regulator band assembly ③ onto the reel table (S) assembly ⑤.

Note : Do not twist or bend, or do not touch the felt surface when mounting the tension regulator band assembly.

- 4) Mount the tension regulator band assembly ③, meeting with the dowels **E** of the chassis.
- 5) Tighten a screw ②.
- 6) Attach a tension coil spring ①.
- 7) Referring to 4-5, mount the brake (S) arm and the brake (T) arm assembly.
- 8) Referring to 2-1, mount the FL cassette compartment assembly.
- 9) Referring to 4-23, adjust the tension regulator position.
- 10) Referring to 4-24, adjust the FWD back tension.

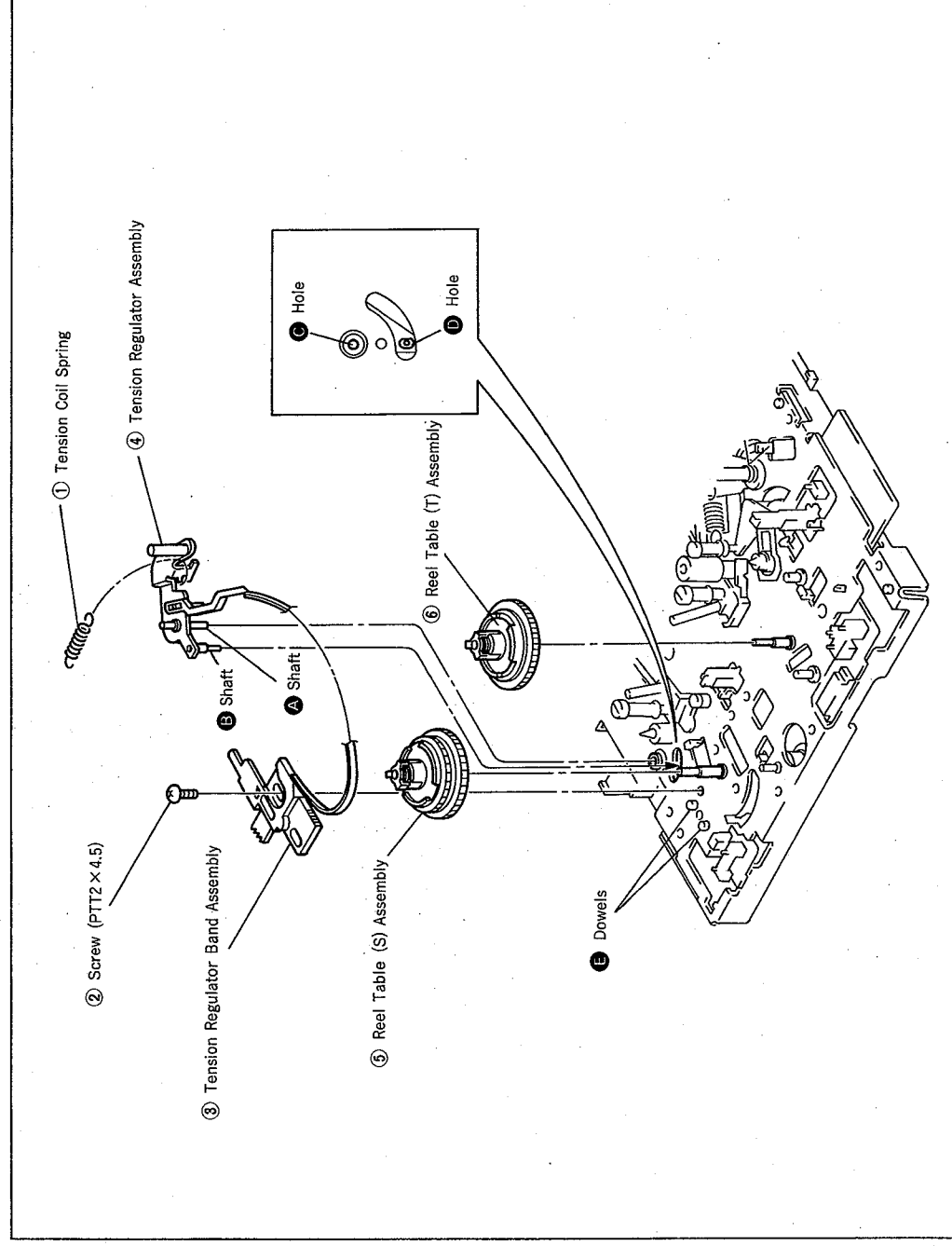


Fig. 12

4-7. TG2 ASSEMBLY (Fig. 13)

1. Removal

- 1) Remove the TG2 upper flange ①.
- 2) Remove the TG2 roller ②, TG2 sleeve ③, TG2 lower flange ④ and compression coil spring ⑤.

2. Mounting

- 1) Mount the compression coil spring ⑤, TG2 lower flange ④, TG2 sleeve ③ and TG2 roller ②.
- 2) Rotate the TG2 upper flange ① by 4 to 6 turns to fix on the shaft.

3. Presetting of TG2 Height

- 1) Rotate to adjust the TG2 upper flange ① so that the height from top surface of mechanical chassis to top surface of TG2 upper flange is 22.12mm.

Note : After mounting, perform 5. Tape Path Adjustment.

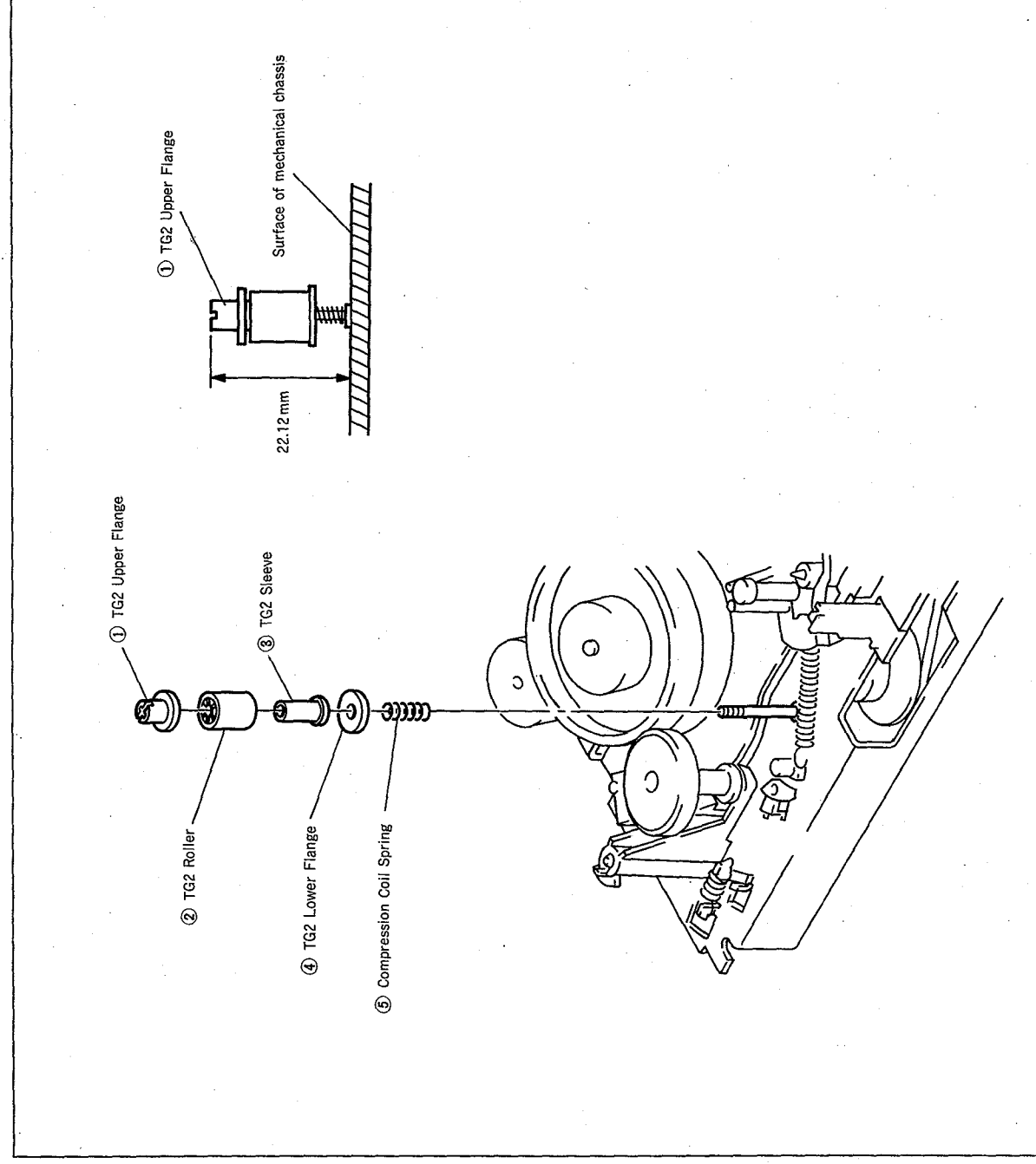


Fig. 13

4-8. TG7 ARM ASSEMBLY (Fig.14)

1. Removal

- 1) Referring to 2-1, remove the FL cassette compartment assembly.
- 2) Remove the TG7 height adjusting screw ①, then the TG7 spacer ② and reel table thrust washer ③.
- 3) Remove the TG7 arm assembly ④ and a torsion coil spring ⑤.

2. Mounting

- 1) Insert the shaft ④ of TG7 arm assembly ④ into a groove ⑥ in TG7 drive lever, and attach a torsion coil spring ⑤ as shown below.
- 2) Mount a reel table thrust washer ③ and a TG7 spacer ②, and tighten tentatively the TG7 height adjusting screw.
- At this time, the height from mechanical chassis top surface to TG7 arm top surface should be 3.3mm.
- 3) Referring to 2-1, mount the FL cassette compartment assembly.

Note : After mounting, perform 5. Tape Path Adjustment.

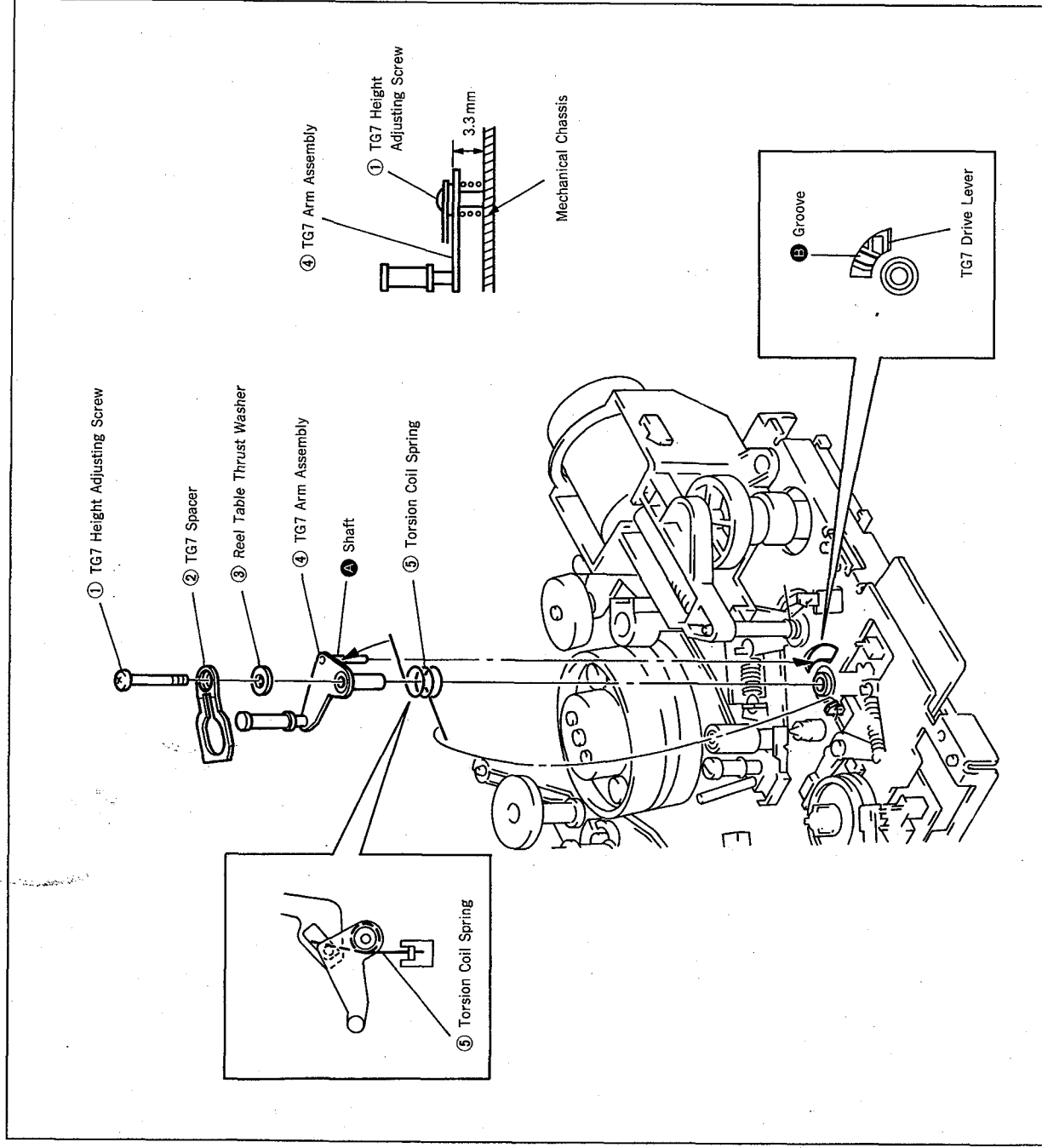


Fig. 14

4-9. CAM MOTOR ASSEMBLY (Fig. 15)

1. Removal

- 1) Referring to 4-1, remove the RP block.
- 2) Remove a screw ①.
- 3) Disengage a claw ④ and remove the cam motor assembly ② in the arrow direction.

2. Mounting

- 1) Mount the cam motor assembly ② with its hole ③ inserted into the shaft ⑤ of chassis.
- 2) Tighten a screw ①.
- 3) Referring to 4-1, mount the RP block.

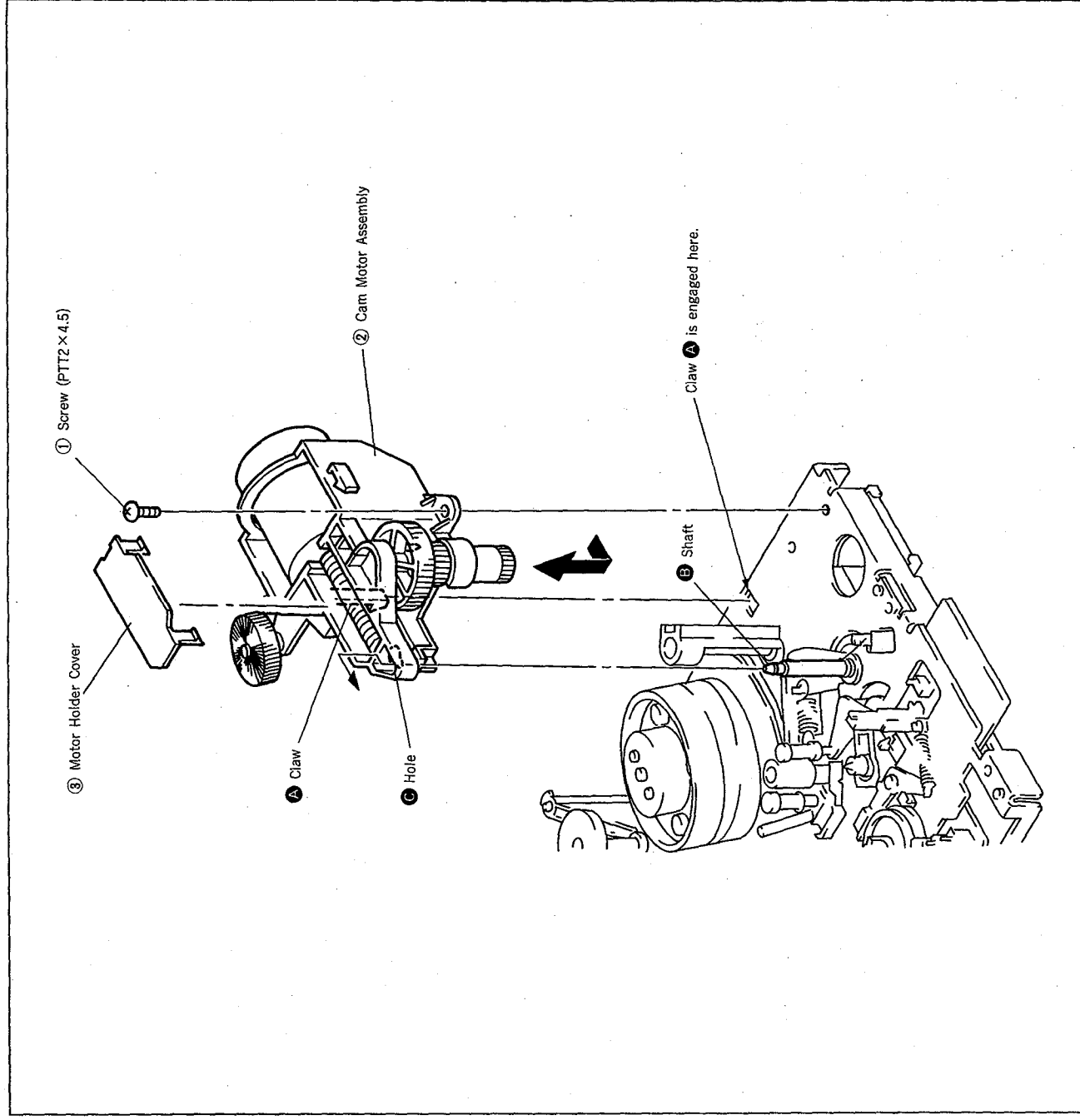


Fig. 15

4-10. PINCH ARM ASSEMBLY (Fig. 16)

1. Removal

- 1) Referring to 2-1, remove the FL cassette compartment assembly.
- 2) Execute the loading until the pinch arm assembly ② becomes level.
- 3) Referring to 4-9, remove the cam motor assembly.
- 4) Remove a torsion coil spring ①, then the pinch arm assembly ②.

2. Mounting

- 1) Mount the pinch arm assembly ② with its hole ④ inserted into the claw ⑤ of pinch drive lever on the chassis.
- 2) Attach a torsion coil spring ① as shown below.
- 3) Referring to 4-9, mount the cam motor assembly.
- 4) Referring to 2-1, mount the FL cassette compartment assembly.

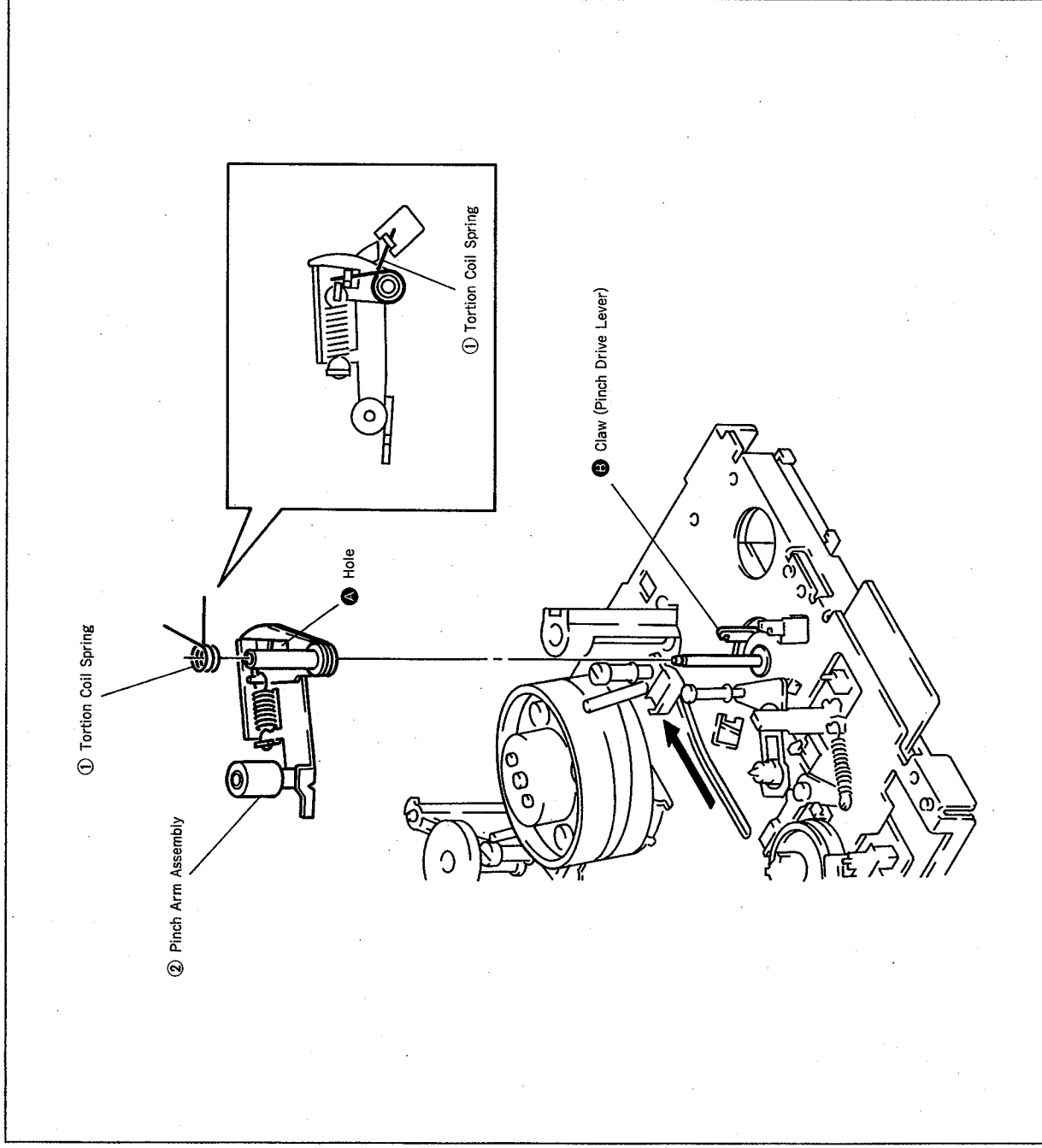


Fig. 16

4-11. WORM WHEEL BRACKET (Fig. 17)

1. Removal

- 1) Remove a screw ①, then the shaft earth assembly ②.
- 2) Remove a screw ③, then the worm wheel bracket ④ in the arrow direction.

2. Mounting

- 1) Mount the worm wheel bracket ④ with its hole ⑤ inserted into the shaft ④ of mechanical chassis.
- 2) Tighten a screw ③.
- 3) Mount the shaft earth assembly ② and tighten a screw ①.

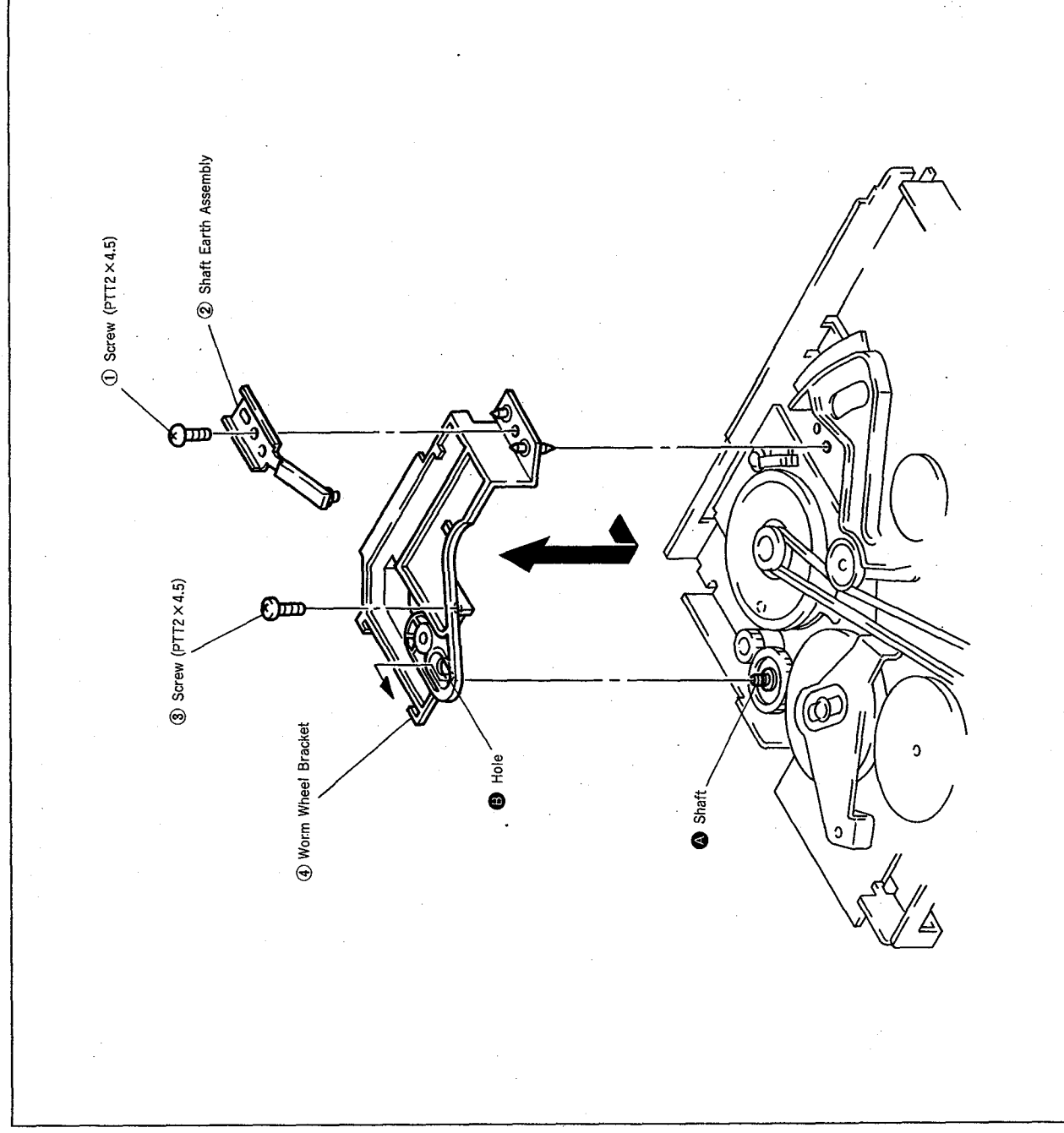


Fig. 17

4-12. CAPSTAN MOTOR (Fig. 18)

1. Removal

- 1) Referring to 4-11, remove the worm wheel bracket.
- 2) Disengage the timing belt ①.
- 3) Remove a screw ②, then the capstan motor ③.

2. Mounting

- 1) Mount the capstan motor ③ with its dowels ④ inserted into holes ⑤ in the mechanical chassis at two places.

Note : Do not touch the capstan motor shaft, oil seal and rotor.

- 2) Tighten a screw ②.
- 3) Engage the timing belt ①.
- 4) Referring to 4-11, mount the worm wheel bracket.

Note : After mounting, perform 5. Tape Path Adjustment.

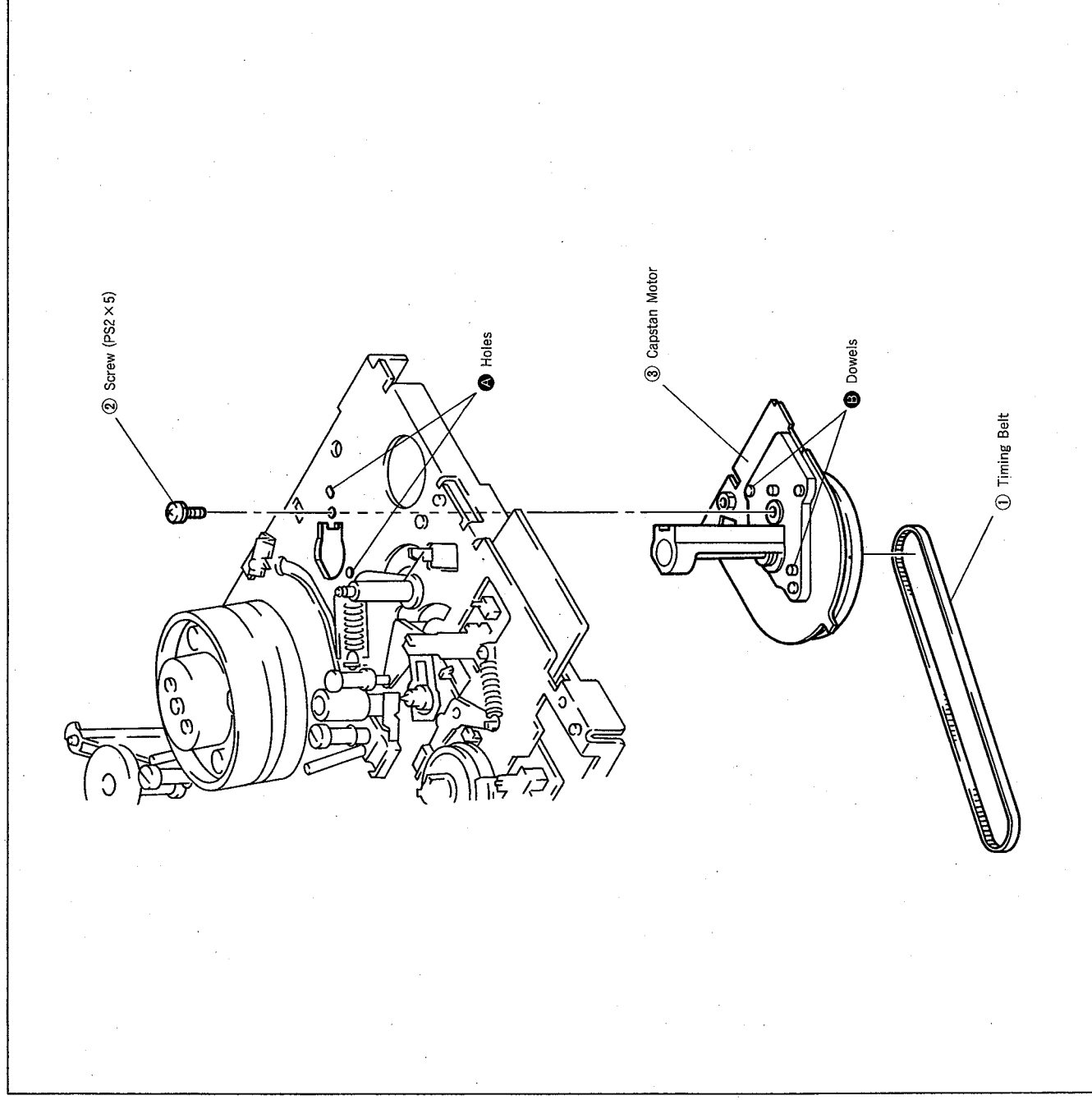


Fig. 18

4-13. DRUM ASSEMBLY (Fig. 19)

1. Removal

- 1) Referring to 4-1. RP Block, disconnect the connector for drum.
- 2) Remove three screws (M2x5) ①.
- 3) Remove the drum assembly ②.

Note : Do not touch the outer surface of drum; hold portions (A) and (B) of drum.

2. Mounting

- 1) Mount the drum ② while aligning with dowels **A** of chassis at two places.

Note : Do not touch the outer surface of drum; hold portions (A) and (B) of drum.

- 2) Tighten three screws (M2x5) ①.

2)-1 Tighten a screw **a** to the torque $29.42\text{mN}\cdot\text{m}$ ($300\text{g}\cdot\text{cm}$).

2)-2 Tighten a screw **b** to the torque $29.42\text{mN}\cdot\text{m}$ ($300\text{g}\cdot\text{cm}$), then return 45° . (Apply a screw locking agent.)

2)-3 Tighten a screw **c** to the torque $29.42\text{mN}\cdot\text{m}$ ($300\text{g}\cdot\text{cm}$), then return 45° . (Apply a screw locking agent.)

Note : After mounting, perform 5. Tape Path Adjustment.

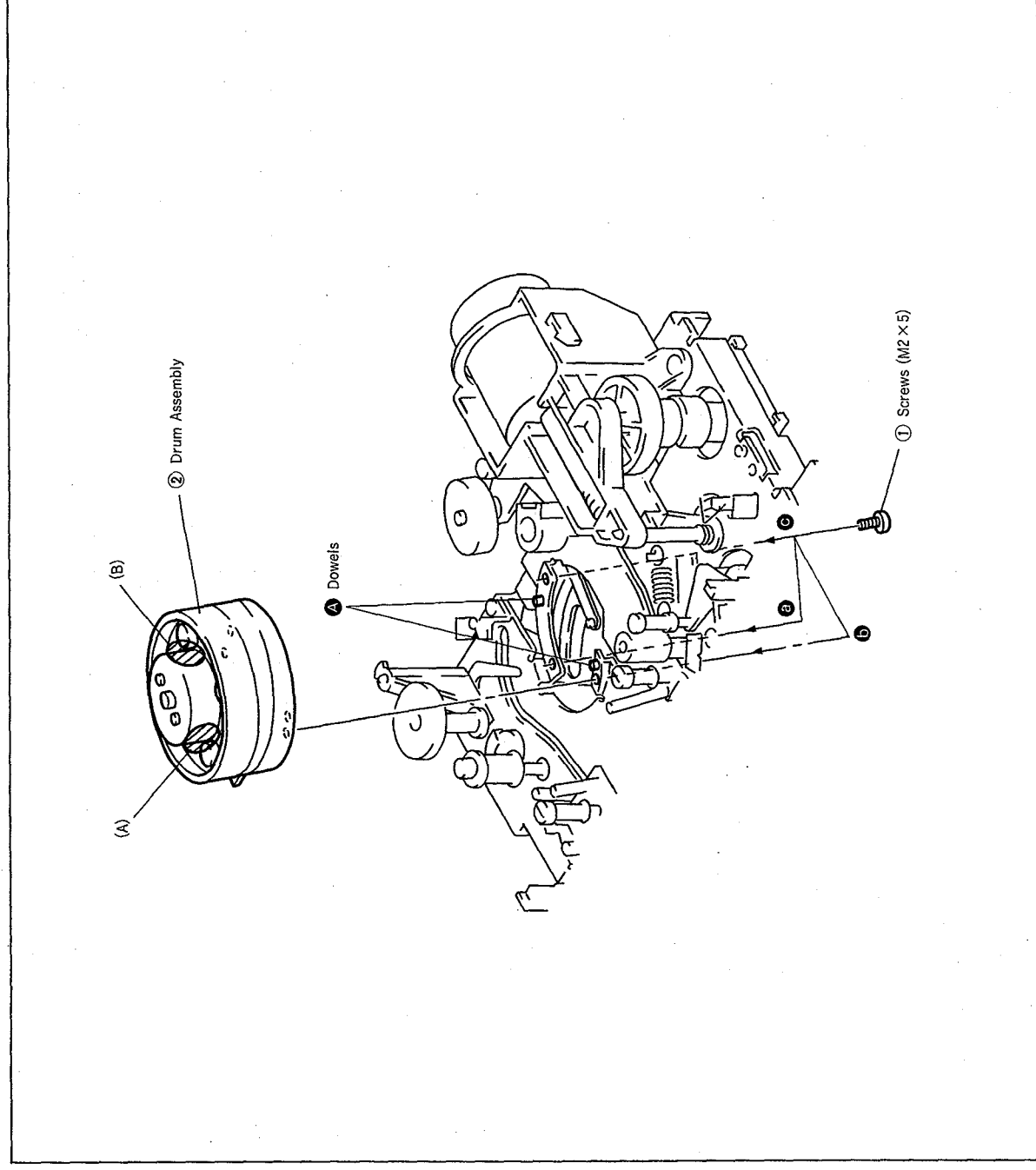


Fig. 19

4-14. PULLEY BASE ASSEMBLY (Fig. 20)

1. Removal

- 1) Remove a screw ①, then the W2, middle ②.
- 2) Disengage a claw **A** and remove the pulley base assembly ③.

2. Mounting

- 1) Mount the pulley base assembly ③ on the shaft **D** of mechanical chassis, and engage the timing belt **C** with the pulley **B**.
- 2) Mount the W2, middle ② and tighten tentatively the screw ①.
- 3) Tighten the screw ① at the position where the portion (A) of pulley base assembly ③ is pushed with 14g force.

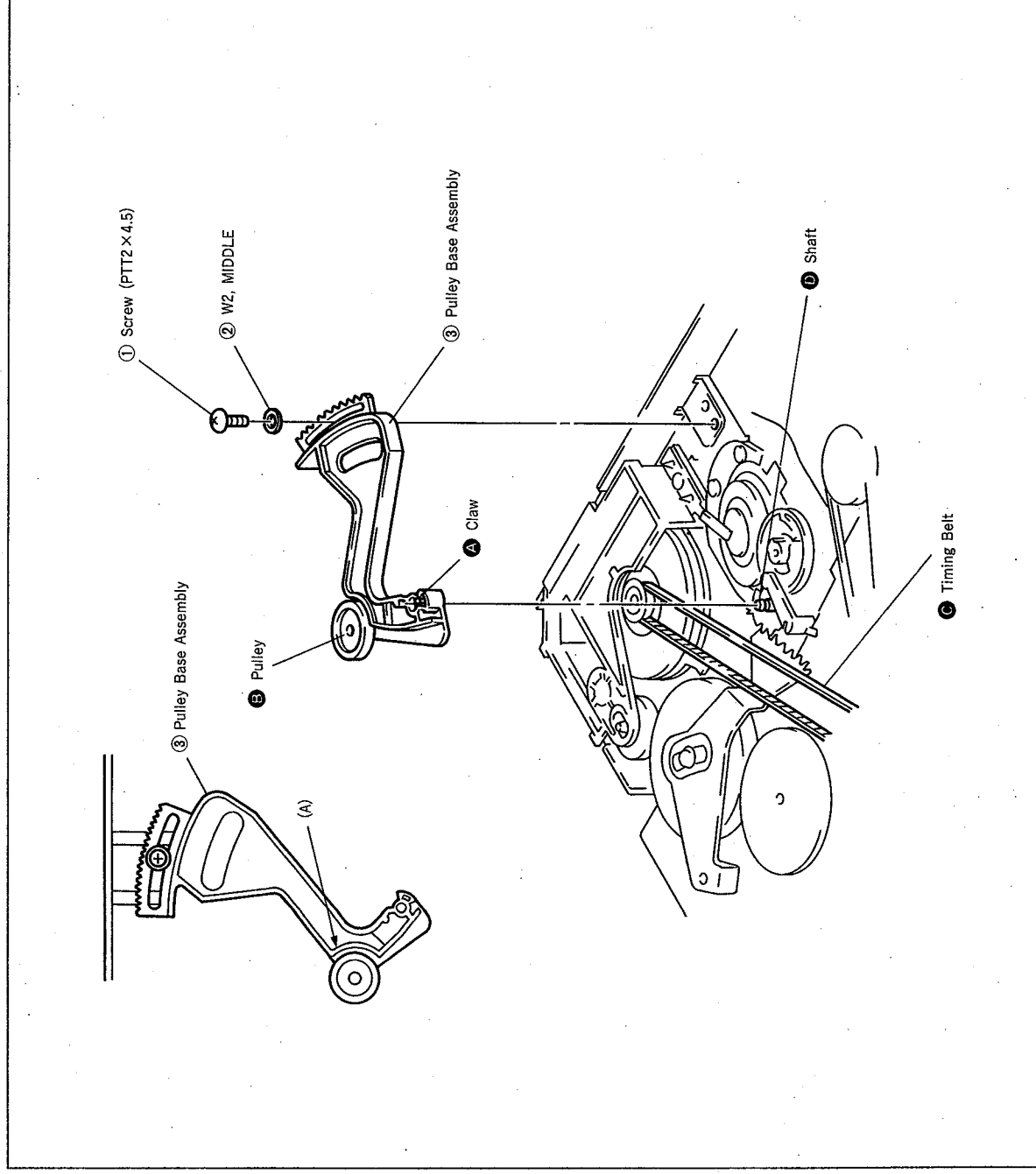


Fig. 20

4-15. LOADING DRIVE LEVER (Fig. 21)

1. Removal

- 1) Disengage the timing belt ①.
- 2) Remove a screw ②, then the W3, small ③.
- 3) Remove the loading drive lever ④.

2. Mounting

- 1) Mount the loading drive lever ④ on the shaft **A** of chassis with its shaft **D** inserted into the loading roller ⑤. At this time, insert the shaft **B** of main cam into the hole **C** in loading drive lever, the shaft **D** of loading drive lever into a slot **E** in main cam, and align a line **F** on loading drive lever with a line **G** on loading gear (T) respectively.
- 2) Mount the W3, small ③ and tighten tentatively the screw ②.
- 3) Engage the timing belt ①.

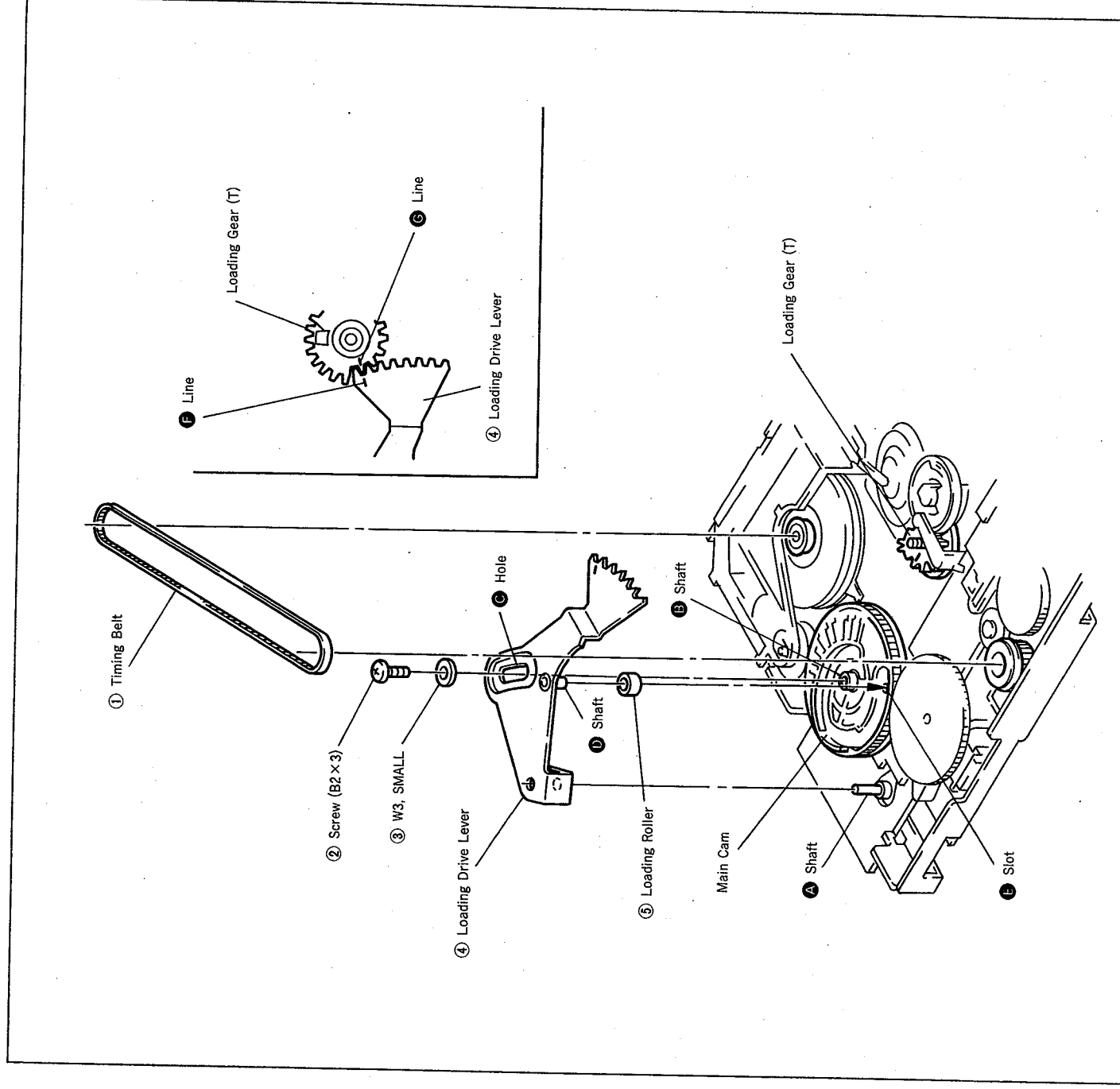


Fig. 21

4-16. ROTARY SWITCH AND MAIN CAM (Fig. 22)

1. Removal

- 1) Referring to 4-11, remove the worm wheel bracket.
- 2) Referring to 4-15, remove the loading drive lever.
- 3) Remove the cam relay gear ①.
- 4) Disengage claws **A** at two places, and disconnect the rotary switch ② from the connector **B**.
- 5) Remove the main cam ③.

2. Mounting

- 1) Mount the main cam ③ with its cam groove **C** inserted into the shaft **D** of slide plate drive lever, and cam groove **B** into the shaft **F** of pinch drive lever respectively.
- 2) Referring to 4-15, mount the loading drive lever.
- 3) Mount the cam relay gear ①.
- 4) Referring to 4-11, mount the worm wheel bracket.
- 5) Connect the rotary switch ② to the connector **B** while aligning ▲ marks each other, and its recess **H** with the recess **G** of main cam ③.

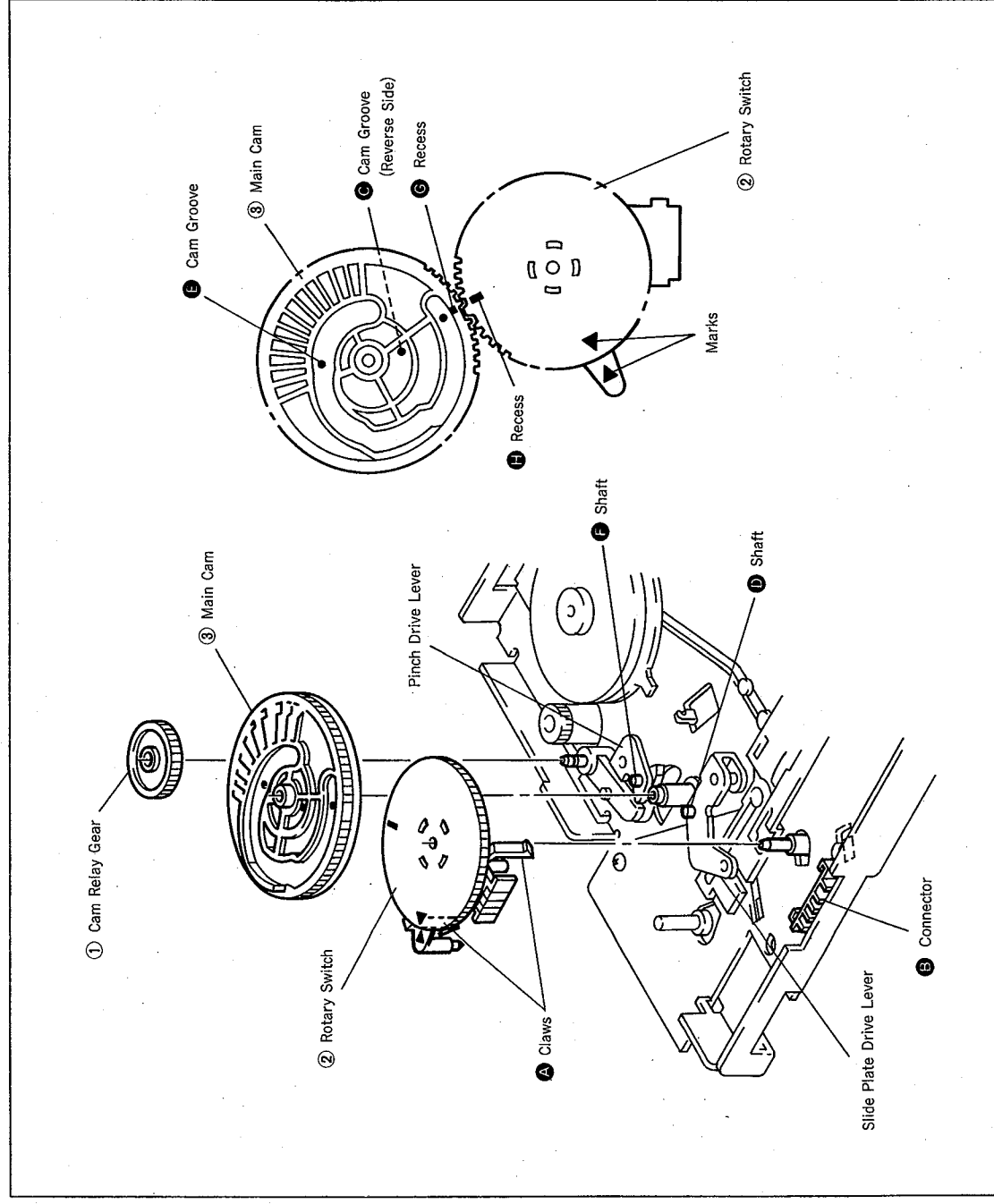


Fig. 22

4-17. SLIDE PLATE (Fig. 23)

1. Removal

- 1) Referring to 4-11, remove the worm wheel bracket.
- 2) Referring to 4-15, remove the loading drive lever.
- 3) Referring to 4-16, remove the rotary switch and main cam.
- 4) Remove the slide plate drive lever ①.
- 5) Disengage the timing belt ②.
- 6) Disengage a claw ③ and remove the FL pulley gear (drive) ③.
- 7) Remove a tension coil spring ④, then the FL switching arm assembly ⑤.
- 8) Remove the brake (S) drive lever ⑧.
- 9) Remove two lock washers 1.5 ⑥, then the slide plate ⑦.

2. Mounting

- 1) Mount the slide plate ⑦ with its groove ③ inserted into the shaft ⑤ of chassis, the groove ① into the shaft ⑤ of S take-up assembly, and the groove ② into the shaft ⑥ respectively. At this time, insert the shaft ① into the groove ④ in slide plate while holding the tension regulator sub-arm toward the arrow.
- 2) Mount two lock washers 1.5 ⑥.
- 3) Referring to 3) of Mounting in 4-18, mount the brake (S) drive lever ⑧.
- 4) Mount the FL switching arm assembly ⑤ and a tension coil spring (4).
- 5) Mount the FL pulley gear (drive) ③ and engage the timing belt ②.
- 6) Mount the slide plate drive lever ① with its shaft ① inserted into a groove ③ in slide plate ⑦, and its hole into the shaft ⑤ of chassis.
- 7) Referring to 4-16, mount the rotary switch and main cam.
- 8) Referring to 4-15, mount the loading drive lever.
- 9) Referring to 4-11, mount the worm wheel bracket.

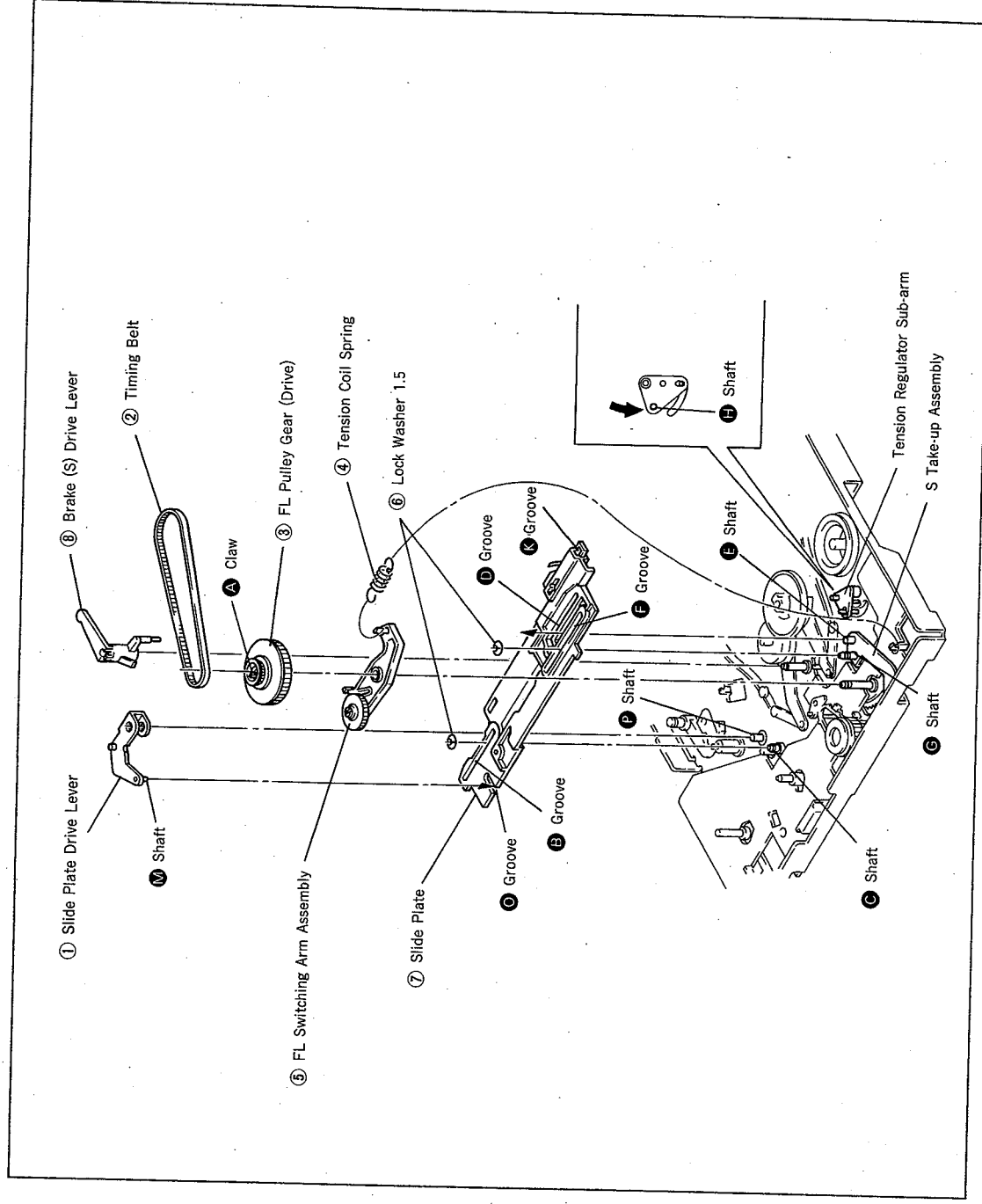


Fig. 23

4-18. LOADING GEAR (S) ASSEMBLY (Fig. 24)

1. Removal

- 1) Referring to 4-15, remove the loading drive lever.
- 2) Disengage a claw **A** and remove the brake (S) drive lever **1**.
- 3) Remove the coaster leaf spring **2**.
- 4) Disengage a claw **B** and remove the loading gear (S) assembly **3**.

2. Mounting

- 1) Mount the loading gear (S) assembly **3** on the shaft **C** of chassis with its arm engaged with the shaft **D** of coaster. At this time, align the portion **E** of loading gear (T) assembly with the portion **F** of loading gear (S) assembly.
- 2) Mount the coaster leaf spring **2**.
- 3) Mount the brake (S) drive lever **1** on the shaft **M** of chassis with its shaft **H** inserted into the portion **G** of brake (S) arm, and the shaft **H** into the groove **K** in loading gear (S) assembly **3**.
- 4) Referring to 4-15, mount the loading drive lever.

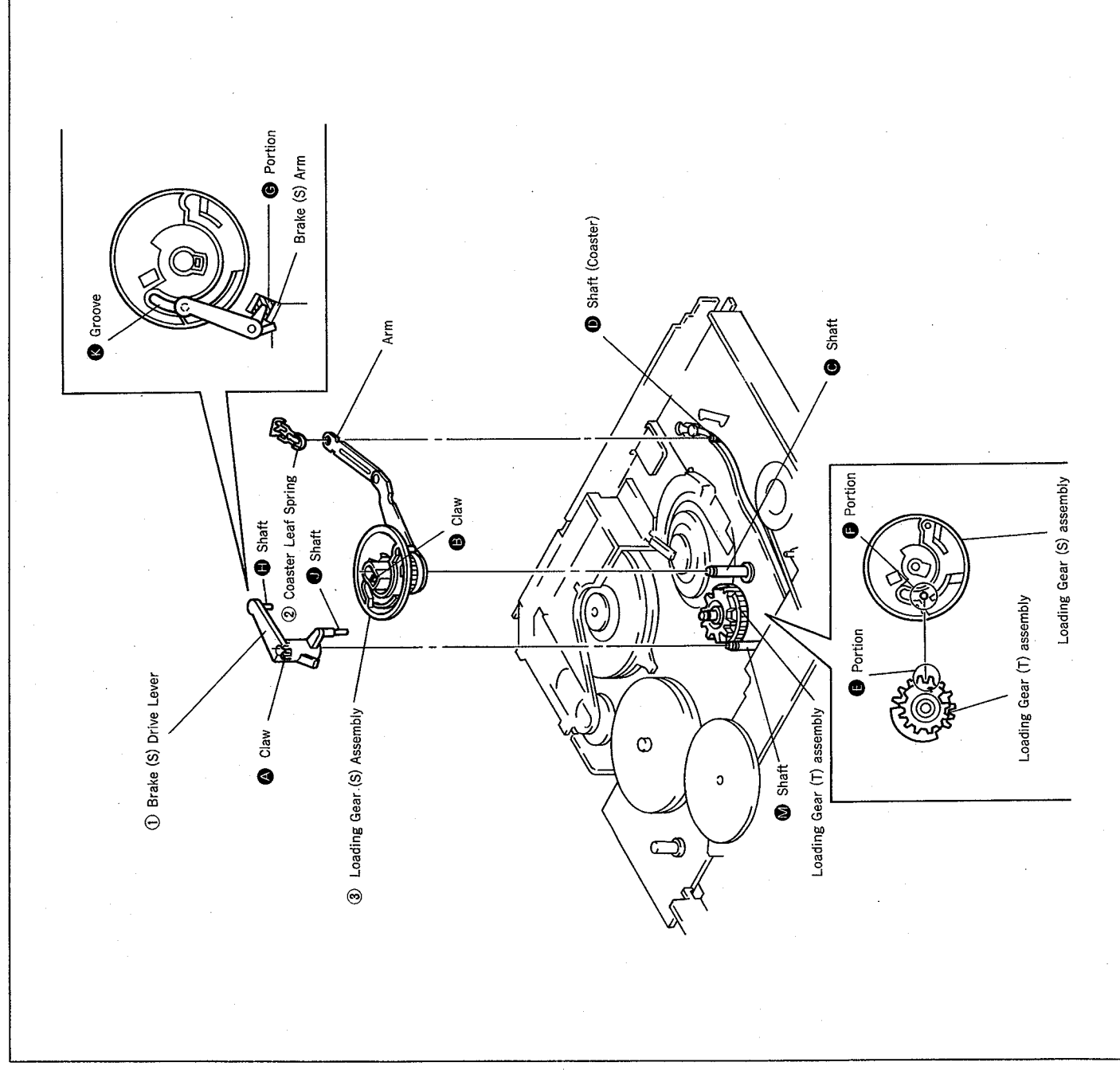


Fig. 24

4-19. LOADING GEAR (T) ASSEMBLY (Fig. 25)

1. Removal

- 1) Referring to 4-15, remove the loading drive lever.
- 2) Referring to 4-18, remove the loading gear (S) assembly.
- 3) Remove the coaster leaf spring ①, then the loading gear (T) assembly ②.

2. Mounting

- 1) Mount the loading gear (T) assembly ② on the shaft A of chassis with its arm engaged with the shaft B of coaster.
- 2) Mount the coaster leaf spring ①.
- 3) Referring to 4-18, mount the loading gear (S) assembly.
- 4) Referring to 4-15, remove the loading drive lever.

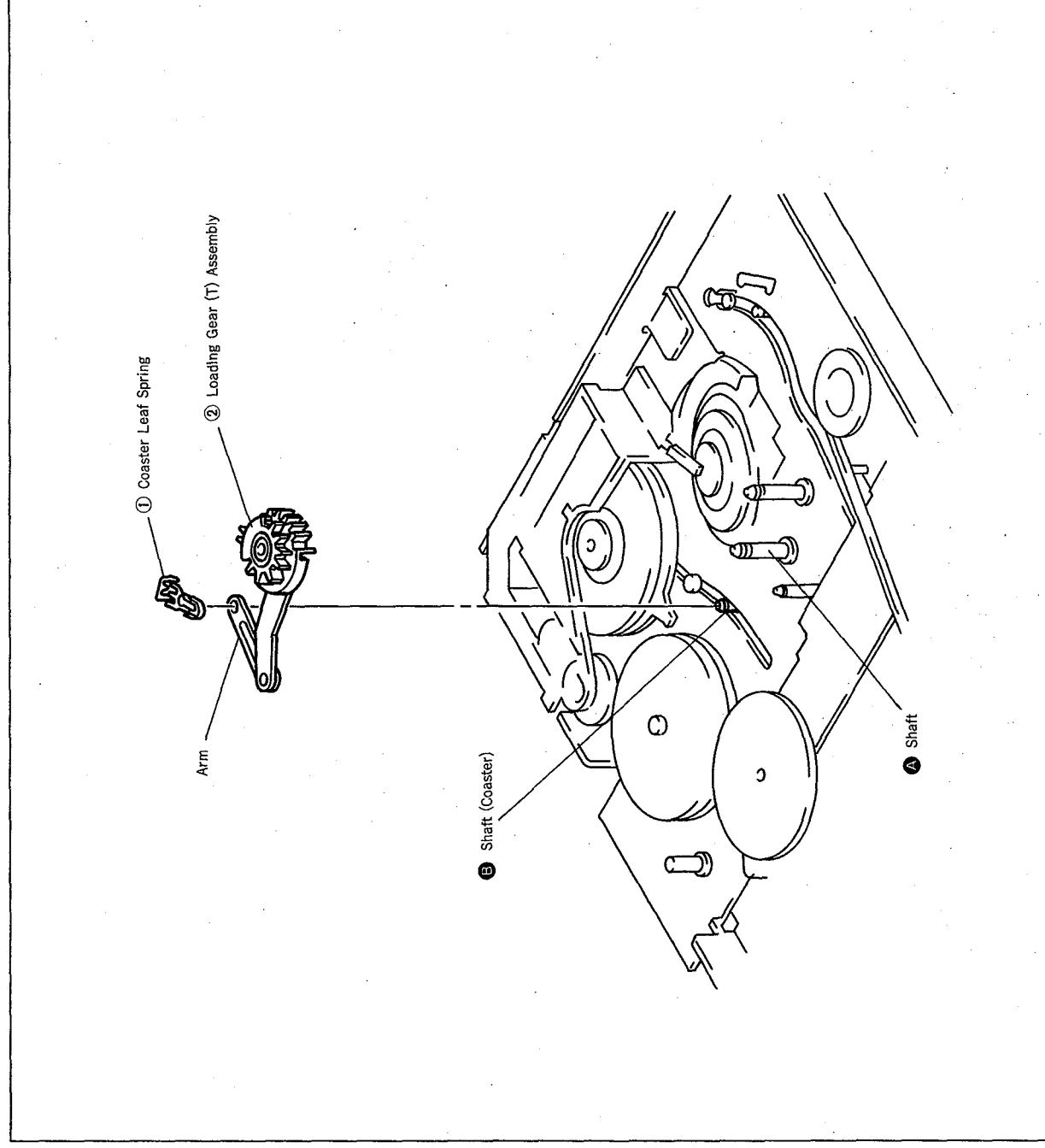


Fig. 25

4-20. COASTER (S) (Fig. 26)

1. Removal

- 1) Referring to 4-2, remove the impedance roller assembly.
- 2) Remove a screw ①, then the catcher (S) ②.
- 3) Remove the coaster leaf spring ③, then the coaster (S) ④.

2. Mounting

- 1) Mount the coaster (S) ④.
- 2) Mount the catcher (S) ② with its holes inserted into dowels A of chassis at two places.
- 3) Tighten a screw ①.
- 4) Referring to 4-18 Loading Gear (S) Assembly, mount the coaster leaf spring ③.
- 5) Referring to 4-2, mount the impedance roller assembly.

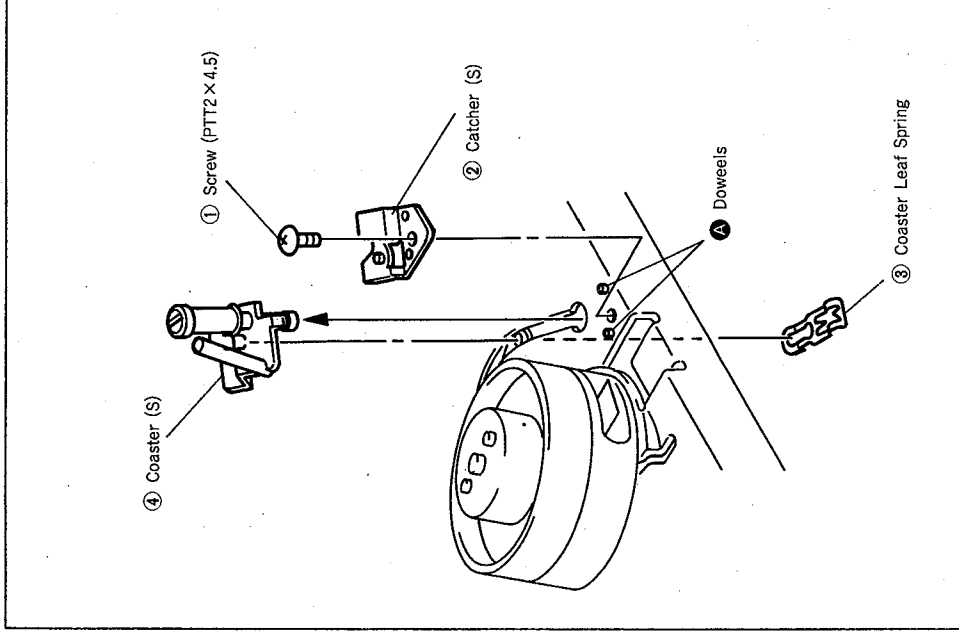


Fig. 26

4-21. COASTER (T) (Fig. 27)

1. Removal

- 1) Remove a screw ①, then the catcher (T) ②.
- 2) Remove the coaster leaf spring ③, then the coaster (T) ④.

2. Mounting

- 1) Mount the coaster (T) ④.
- 2) Mount the catcher (T) ② with its holes inserted into dowels A of chassis at two places.
- 3) Referring to 4-19 Loading Gear (T) Assembly, mount the coaster leaf spring ③.

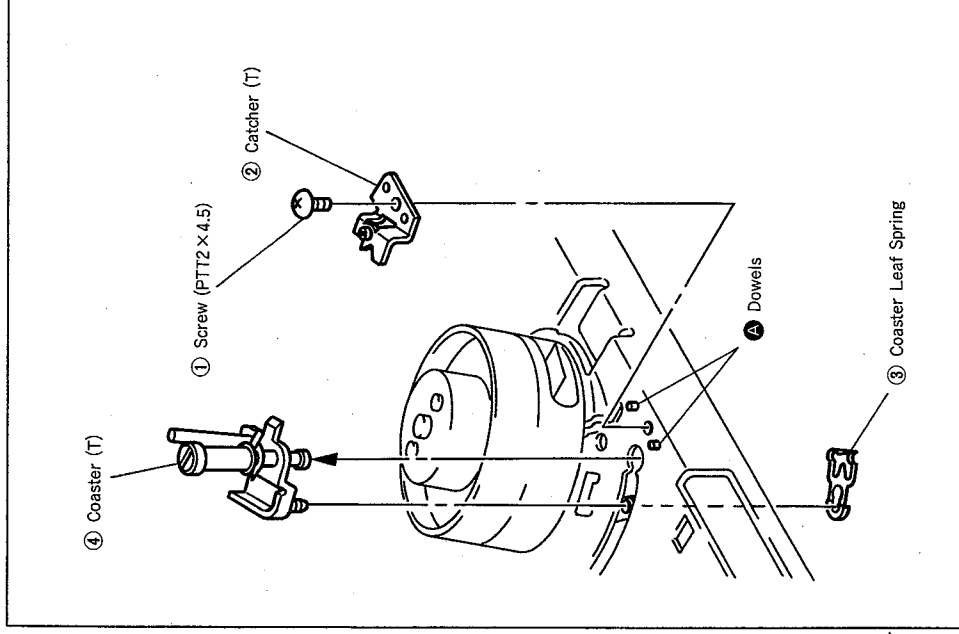


Fig. 27

4-22. ROTARY UPPER DRUM REPLACEMENT

1. Removal

• If possible, make a recording before removal.

- 1) Remove the two screws ① (Fig. 28).
- 2) Mount the jig ② (Ref. No. J-8) with the two supplied screws ③, then screw the attached hexagon socket screws ④ to the jig ②. The rotary upper drum ⑤ will move upward and come off (Fig. 29).

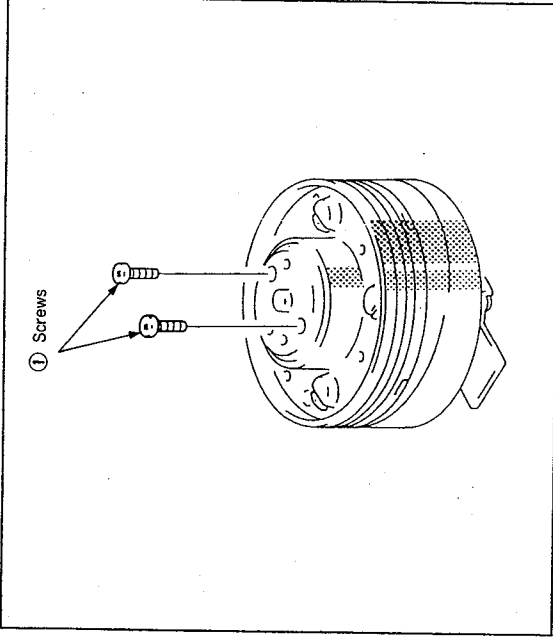


Fig. 28

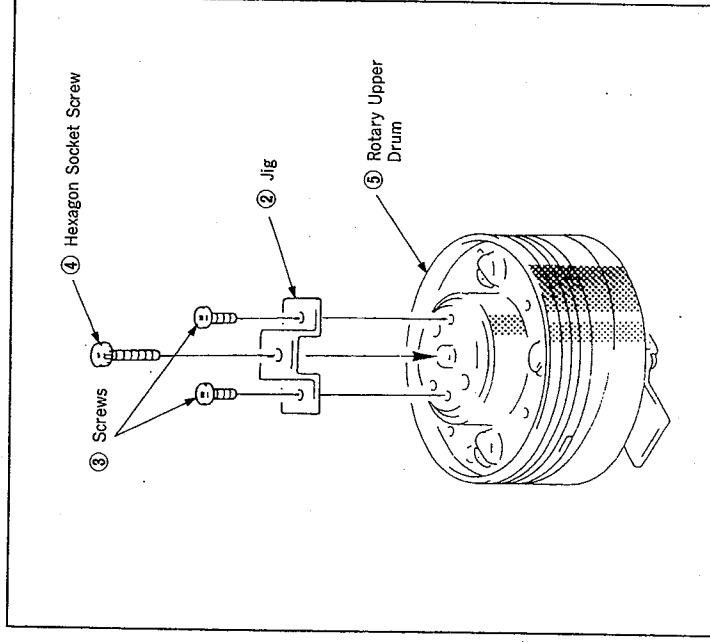


Fig. 29

2. Installation

- 1) Wipe clean the flange surface and the rotary upper drum ⑤ surface that makes contact with it, and confirm that they are free from dirt and scratches.
- 2) Insert the jig ⑥ (Ref. No. J-8) into the drum positioning hole, then set then set the rotary upper drum ⑤ by passing the jig through its positioning hole ⑦. (Fig.30)
- 3) Remove the jig ⑥ and push down the rotary upper drum ⑤ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two screws ① alternately (Fig.28).
- 4) Tighten strongly both two screws ①, and loosen both screws once, then tighten them again (for stable seating).
- 5) Insert the jig ⑥ into the positioning hole ⑦ again and confirm that it goes in smoothly. If it does not, loosen the two screws ①, repeat step 2) of the Removal paragraph and restart the setting procedure.
- 6) Tighten the screws ①.

Note : After installing, be sure to perform tape path adjustment as described in section 5.

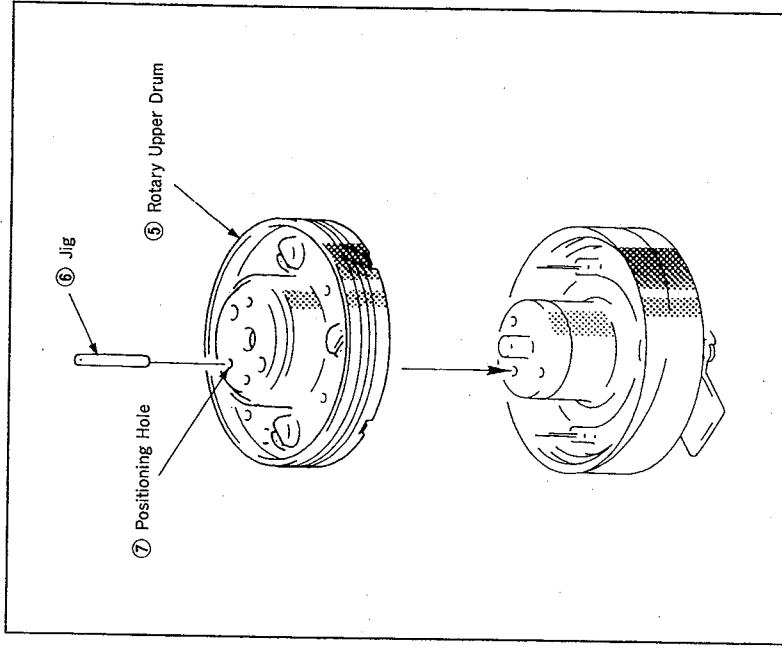


Fig. 30

4-23. ADJUSTMENT OF TENSION REGULATOR POSITION (Fig. 31)

1. Adjustment

- 1) Set a cassette tape and run the tape in the PB mode.
- 2) With the tape running, check that the distance from No.1 guide to No. 2 guide upper flange is 5.5 mm. (On the centerline of TG2 guide)
- 3) If they are not at the specified positions, perform adjustment in step 4) and subsequent steps.
- 4) Loosen the screw ①.
- 5) If No.1 guide is located inside the specified position, shift the tension adjusting base toward the arrow **A** using the FWD B.T. adjusting driver (Ref No. J-13). Or, if it is located outside, shift toward the arrow **B**.
- 6) Tighten the screw ①.

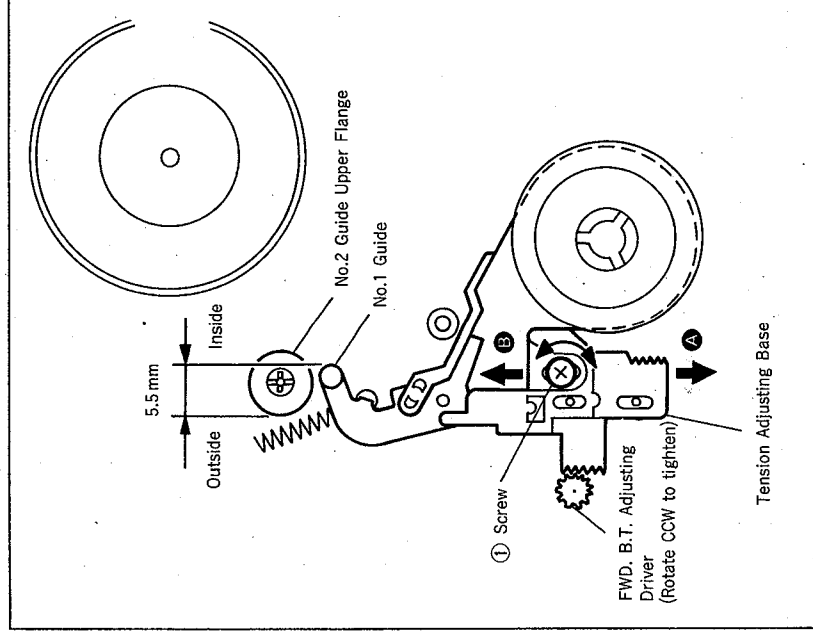


Fig. 31

4-24. FWD BACK TENSION ADJUSTMENT (Fig. 32)

- 1) Select the TEST mode 1 using the adjusting remote controller (Ref No. J-10).
- 2) Set the torque cassette (Ref No. J-7).
- 3) Select the FWD mode, and check that the torque of S reel table is $0.88 \sim 1.17\text{mN}\cdot\text{m}$ ($9 \sim 12\text{g}\cdot\text{cm}$). If it is out of standard, adjust the tension adjusting arm position.

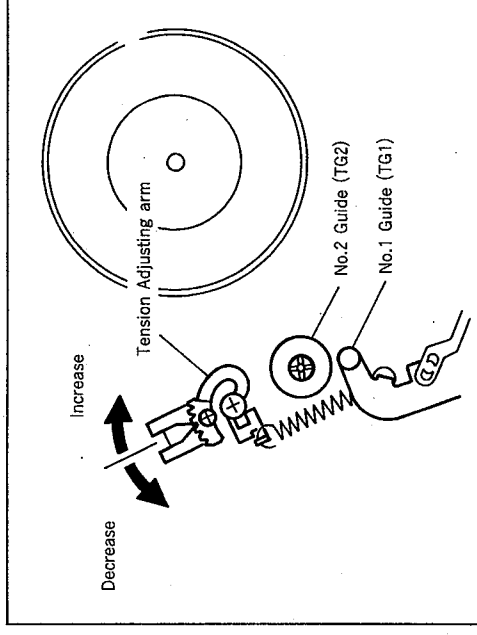


Fig. 32

4-25. REEL TORQUE CHECK

- 1) Set the torque cassette.
- 2) Select the FWD mode, and check that the torque fluctuation center of T reel table is $0.98 \sim 1.96\text{mN}\cdot\text{m}$ ($10 \sim 20\text{g}\cdot\text{cm}$).
- 3) Select the RVS mode, and check that the torque fluctuation center of S reel table is $1.77 \sim 2.75\text{mN}\cdot\text{m}$ ($18 \sim 28\text{g}\cdot\text{cm}$).
- 4) Select the REV mode, and check that the torque of T reeltable is $0.98 \sim 1.96\text{mN}\cdot\text{m}$ ($10 \sim 20\text{g}\cdot\text{cm}$).
- 5) If the above data is not satisfied, the tension regulator band, T hard tab or T soft assembly will be faulty. Check them first, and if no abnormality is found, replace respective reel tables.

4-26. FL WORM WHEEL (Fig. 33)

1. Removal

- 1) Disengage tabs **A** at four places and remove the gear cover **1**.
- 2) Remove the drive gear **2**, then the FL worm wheel **3**.

2. Mounting

- 1) Mount the FL worm wheel **3**.
- 2) Meet a hole **B** in drive arm (T) on right side with a hole in chassis, and also a hole **C** in FL worm wheel **3** with a hole in side plate. Meet a hole **D** in drive gear **2** with a hole in side plate. Meeting respective holes, mount the drive gear **2**.
- 3) Mount the gear cover **1**.

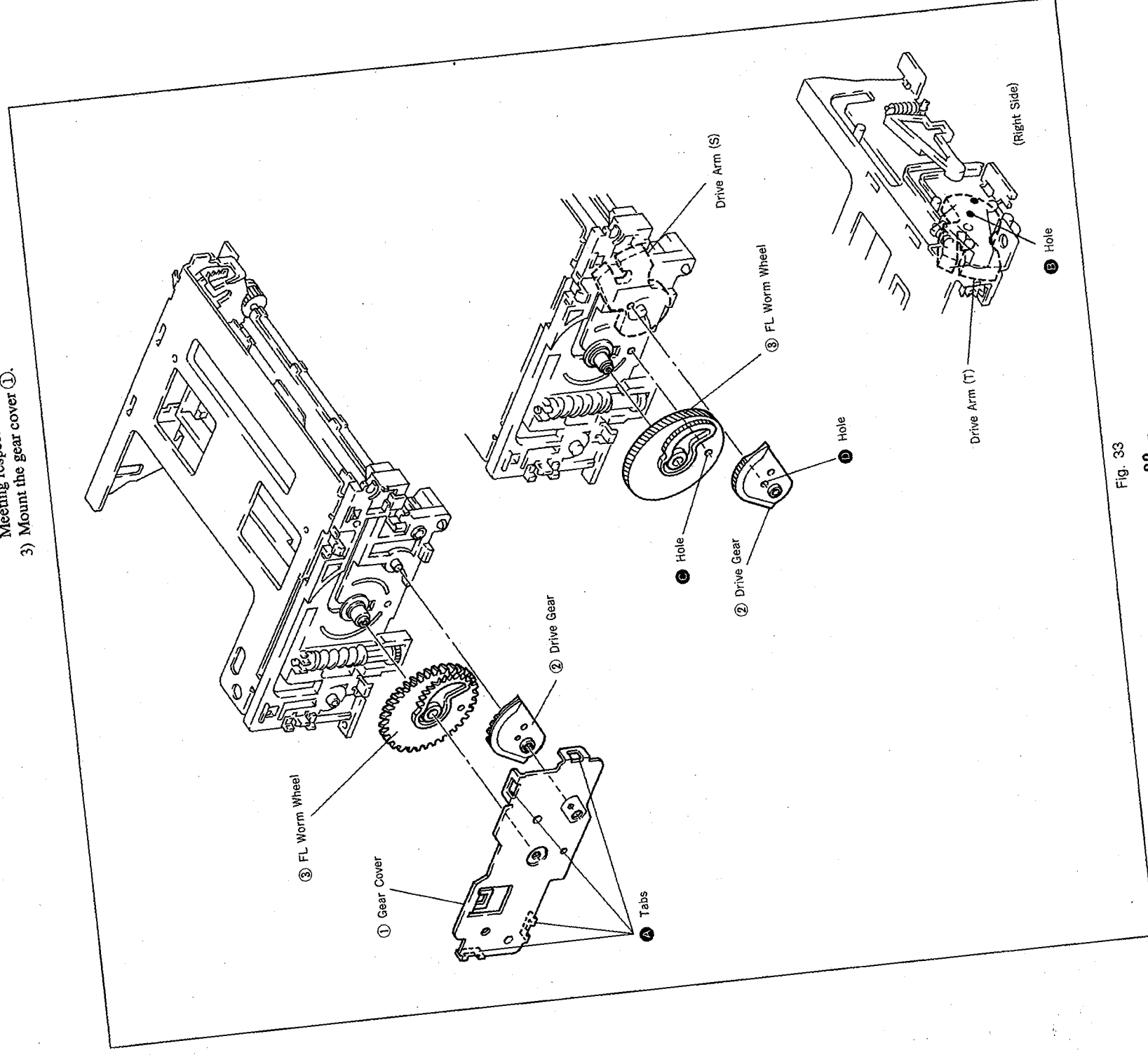


Fig. 33

5. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF automatically corrects it, which means that perfect adjustment cannot be done.

Therefore, in the F mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode with the adjusting remote controller (Ref No. J-10).

So, fine tracking adjustment can be easily done.

Also, the PATH mode setting varies with the model, and therefore, refer to the Service Manual.

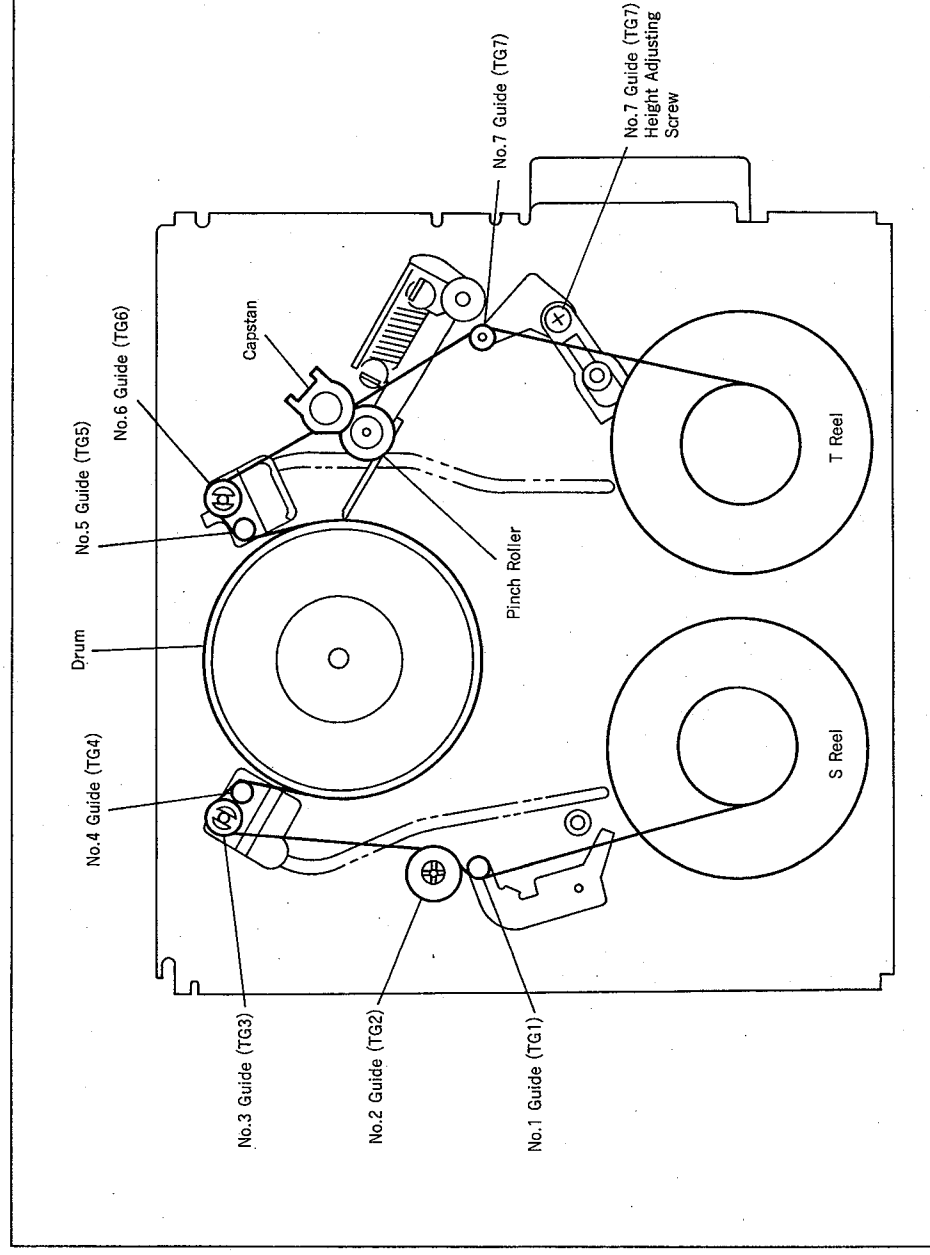


Fig. 34

[Note on Adjustment of No.7 Guide (TG7)]

The height adjustment screw for No.7 guide (TG7) is located at some distance from the guide (refer to Fig.42).

Therefore, when performing section 5-4, No.7 Guide (TG7)

Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-6), modified as follows, and perform adjustment in playback mode.

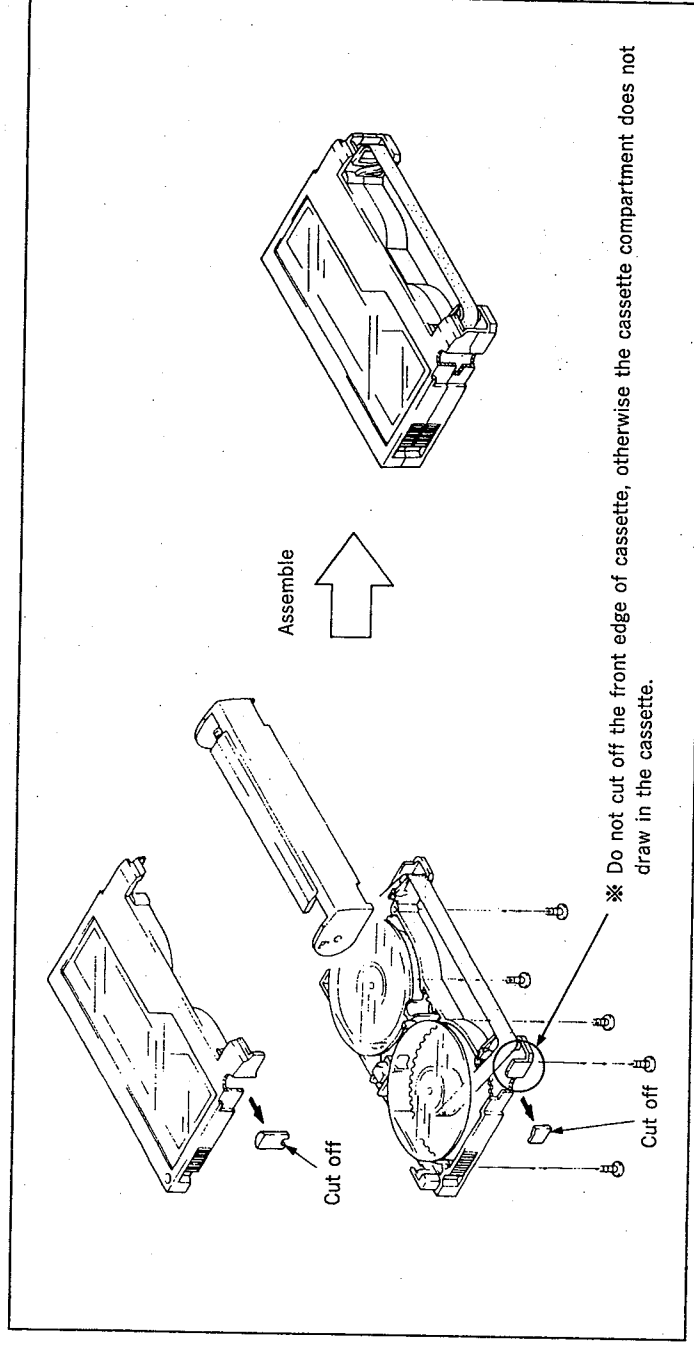


Fig. 35

5-1. PREPARATION FOR ADJUSTMENT

- 1) Clean the tape running surface (tape guides, drum, capstan shaft, pinch roller) (Fig. 34).
 - 2) Set the PATH mode using the adjusting remote controller.
 - 3) connect an oscilloscope to the check pin connector of the set.
 - 4) Play back a tracking alignment tape (NTSC : WR5-1NP, or PAL : WR5-1CP).
 - 5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope (Fig. 36 ㉔).
- If not flat, make adjustment with the procedures below.
When the RF waveform is not flat at the inlet/outlet ; See Fig. 36 ㉕ and ㉖.

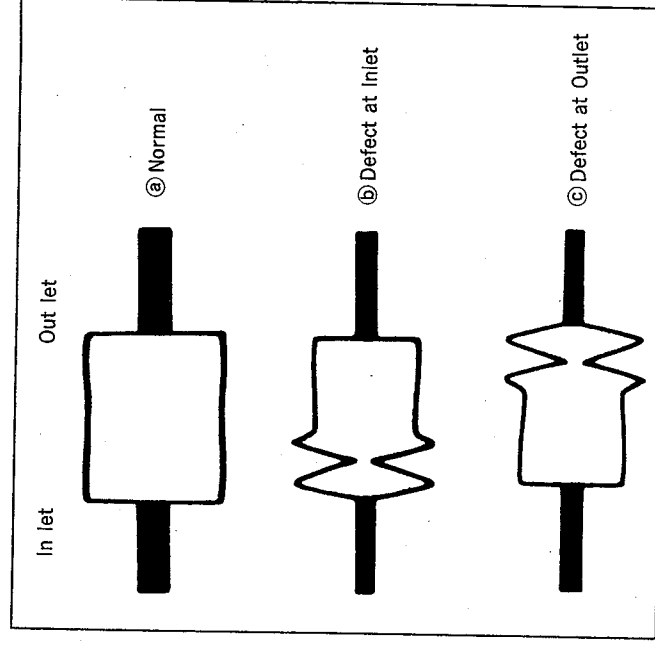


Fig. 36

5-2. TRACKING ADJUSTMENT (Fig. 37, 38)

- 1) Play back the tracking alignment tape.
- 2) Loosen the No.3 guide (TG3) lock screw ① and turn the No.3 guide to flatten the waveform at the inlet.
- 3) Tighten the No.3 guide (TG3) lock screw ① to lock the No.3 guide.
- 4) Loosen the No.6 guide (TG6) lock screw ② and turn the No.6 guide to flatten the waveform at the outlet.
- 5) Tighten the No.6 guide (TG6) lock screw ② to lock the No.6 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

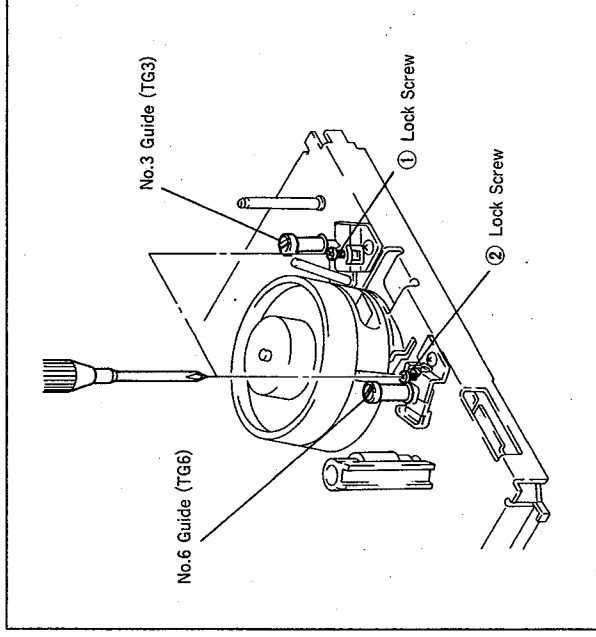


Fig. 37

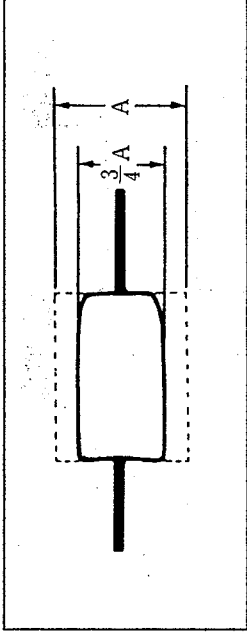


Fig. 38

5-3. No.2 GUIDE (TG2) ADJUSTMENT

When the No.2 guide has been turned or replaced, perform height presetting before this adjustment.

5-3-1. No. 2 GUIDE (TG2) HEIGHT PRESETTING (Fig. 39)

- 1) Rotating the TG2 upper flange, adjust the height from top surface of mechanical chassis to top surface of TG2 upper flange to 22.12mm.

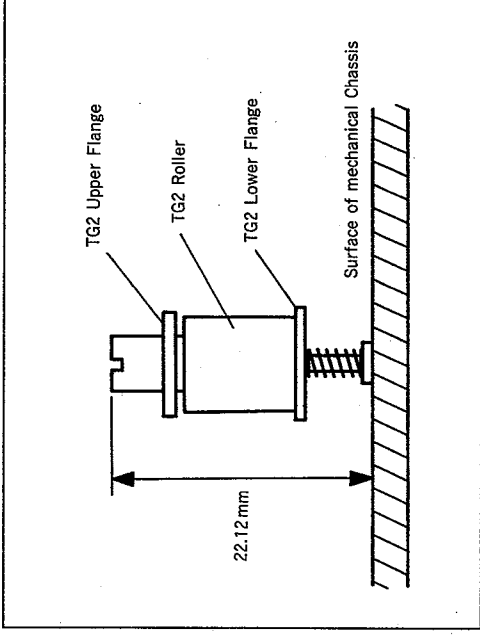


Fig. 39

[Reference]

This F mechanism is equipped with four adjustable guides (TG2, 3, 6 and 7). To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG7	Raise	Clockwise
	Lower	Counterclockwise

5-3-2. No. 2 GUIDE (TG2) ADJUSTMENT (Fig. 40, 41)

- 1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
 - 2) Confirm that the tape is not bent at the lower flange ② of the No.2 guide (TG2) ① (Fig. 40). If it is, turn the upper flange ③ of the No.2 guide (TG2) clockwise with a screwdriver, lowering it until the tape is straightened.
 - 3) Play back the alignment tape for tracking adjustment.
 - 4) Perform tracking adjustment and tracking fine adjustment as described in sections 5-2.
 - 5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
 - 6) If the waveform is not normal (Fig. 41), turn the upper flange ③ of the No. 2 guide (TG2) ① 90° counterclockwise and repeat step 5.
- Repeat steps 5) and 6) until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5).

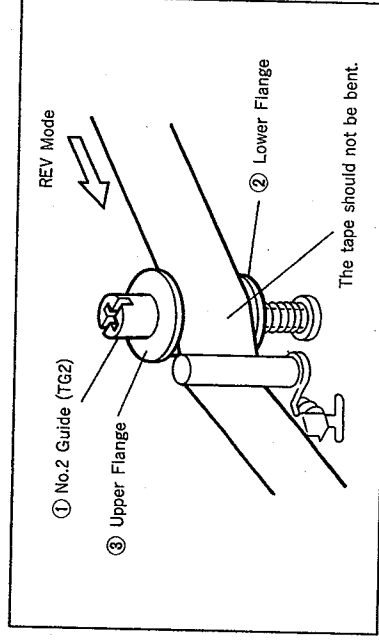


Fig. 40

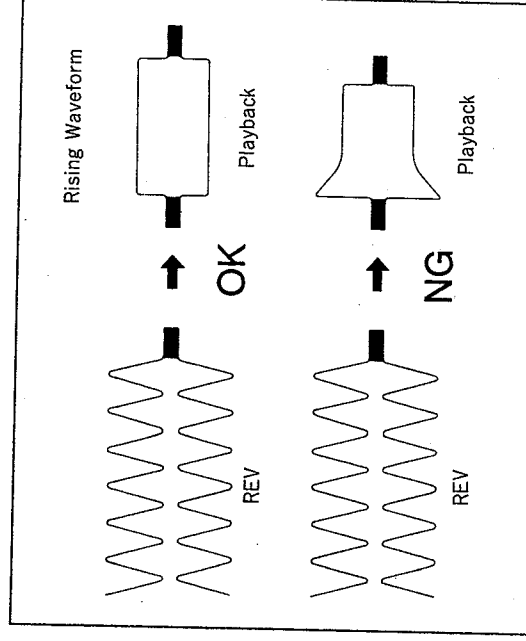


Fig. 41

5-4. No.7 GUIDE (TG7) ADJUSTMENT (Fig. 42)

Note : This adjustment requires the No. 7 guide adjusting cassette (Fig. 35).

- 1) Play back the No.7 guide adjusting cassette and set the REV mode.
 - 2) Confirm that the tape is not bent between the No.6 guide (TG6) ① and the capstan ②. If it is, turn the height adjusting screw ④ of the No.7 guide (TG7) ③ until the tape is straightened.
 - 3) Set the playback mode again and confirm that the tape is not bent between the capstan ② and the No.7 guide (TG7) ③ (specification : 0.5mm or less). If the tape is bent beyond the specification, turn the height adjusting screw ④ until bending is within the specification (0.5mm).
- If in the REV mode tape bending between the No. 6 guide (TG6) ① and the capstan ② is 0.3mm or less, adjustment can be considered completed.

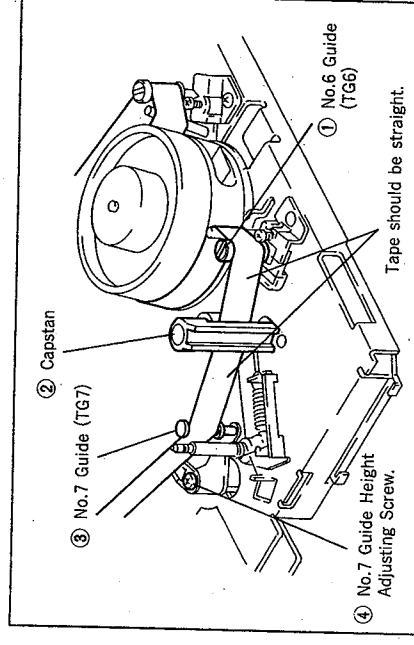


Fig. 42

5-5. CUE AND REV WAVEFORM CHECK (Fig. 43)

- 1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (Fig. 43). In case pitch is not constant, perform section 5-2.Tracking Fine Adjustment and section 5-4. No.7 Guide Adjustment.
- 2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (Fig. 43). Otherwise, perform section 5-2 Tracking Fine Adjustment.

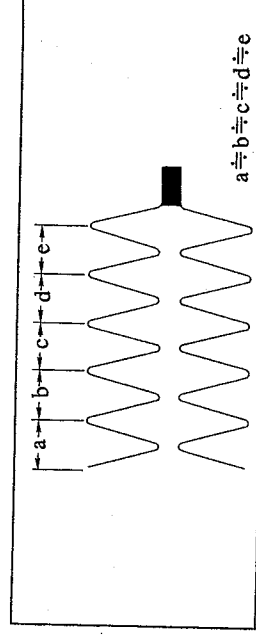


Fig. 43

5-6. CHECK AFTER ADJUSTMENT

5-6-1. TRACKING CHECK

- 1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (Fig. 44).
- 2) Then, confirm that the minimum amplitude value (E_{MIN}) is 65% of the maximum value (E_{MAX}) or larger (Fig. 45).
- 3) Confirm that no large fluctuations occur on the waveform (Fig. 45).

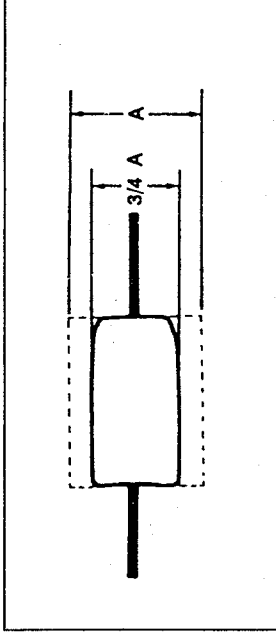


Fig. 44

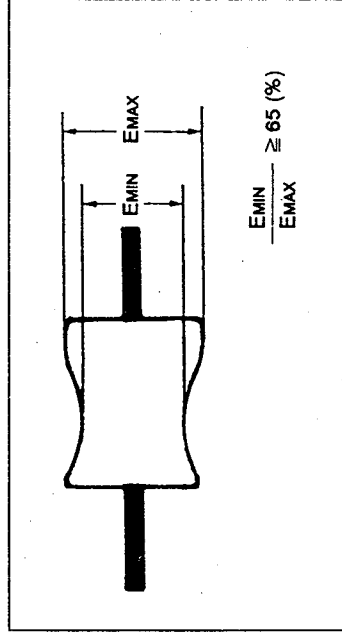


Fig. 45

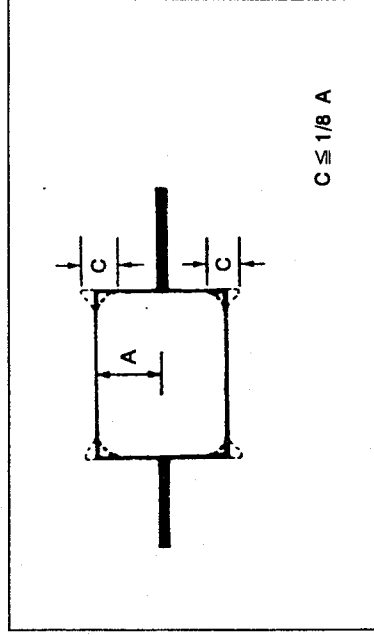


Fig. 46

5-6-2. RISING CHECK (Fig. 47)

- 1) Play back the alignment tape for tracking adjustment.
- 2) Cancel the track shift mode.
- 3) Eject the tape, then load it again.
- 4) Set the playback mode and confirm that the RF wave form rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
- 5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
- 6) Repeat steps 3) to 5) once more.

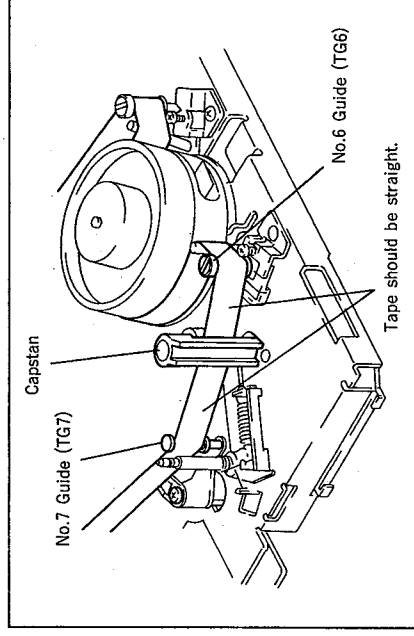


Fig. 47

5-6-3. TAPE PATH CHECK (Fig. 48)

- 1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3mm, at the lower flange of the No. 2 guide, the upper flange of the No.3 guide, the upper flange of the No. 6 guide and the No.7 guide upper and lower flanges.
- 2) Confirm that no tape rising occurs and that curling is less than 0.3mm at the flange of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

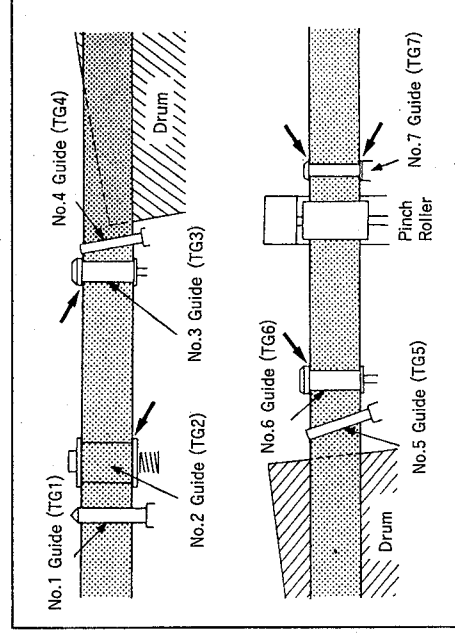


Fig. 48

SECTION 6 EXPLODED VIEWS

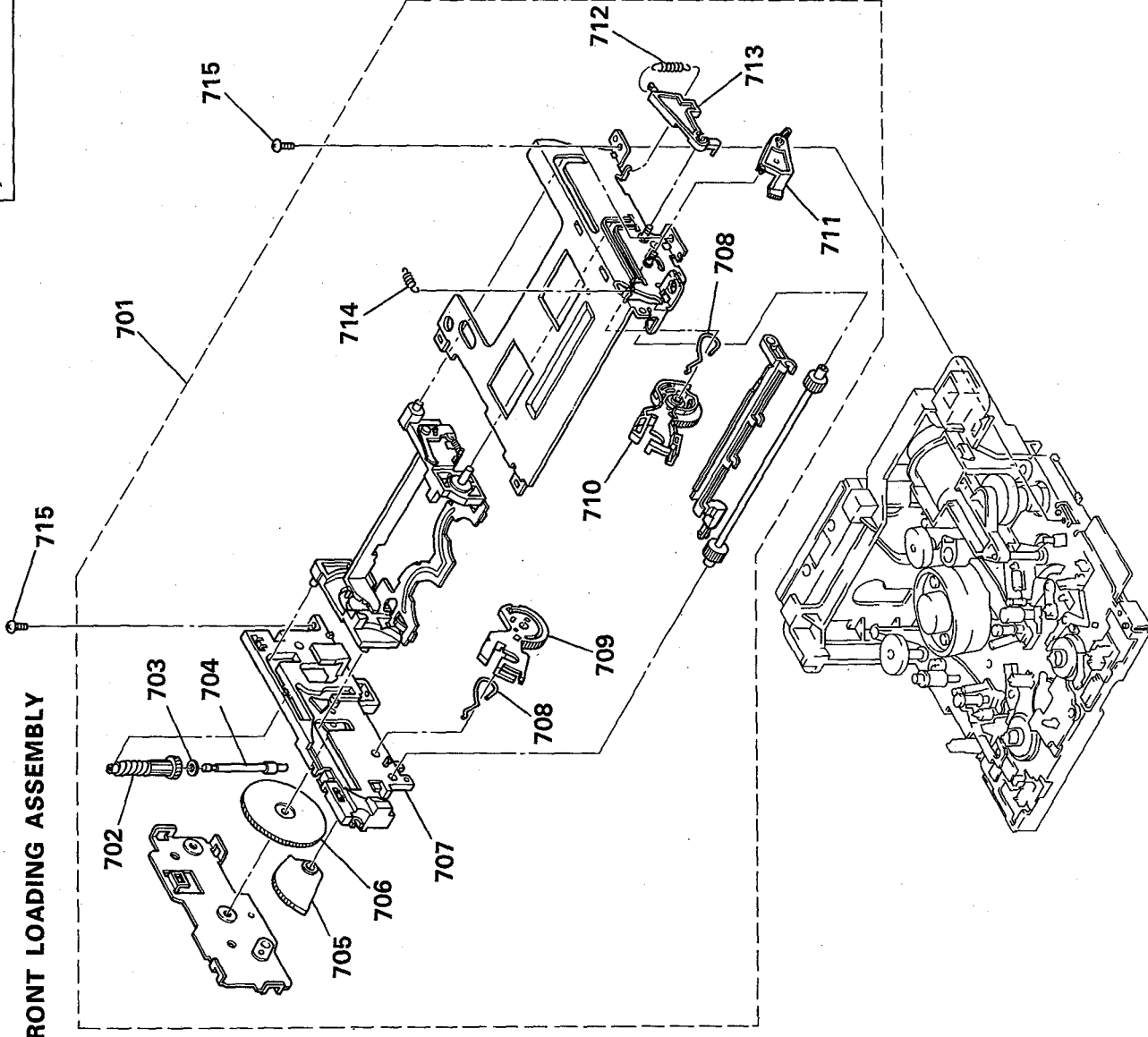
NOTE:

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (#mark) list is given in the last of this parts list.

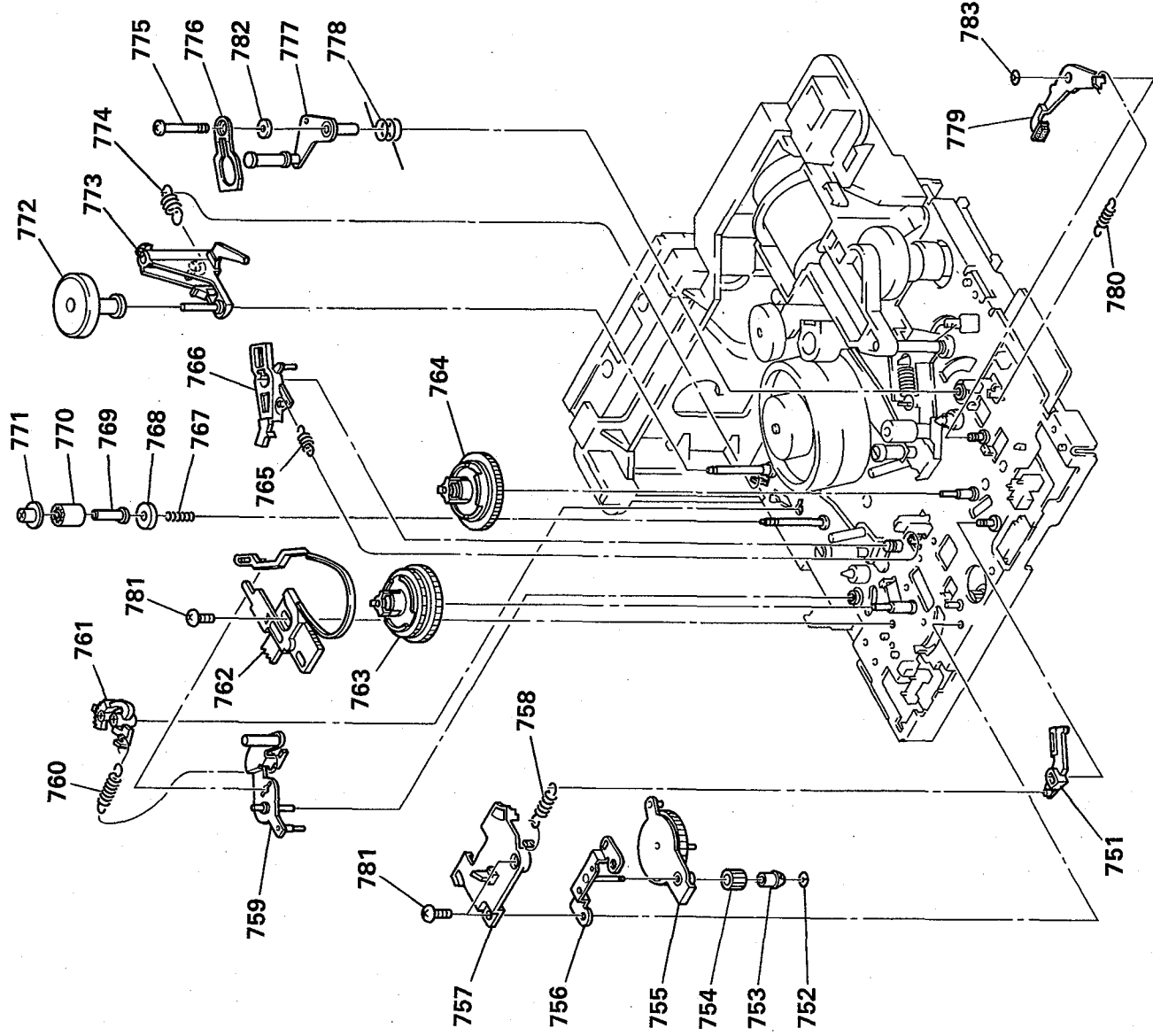
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

6-1. FRONT LOADING ASSEMBLY



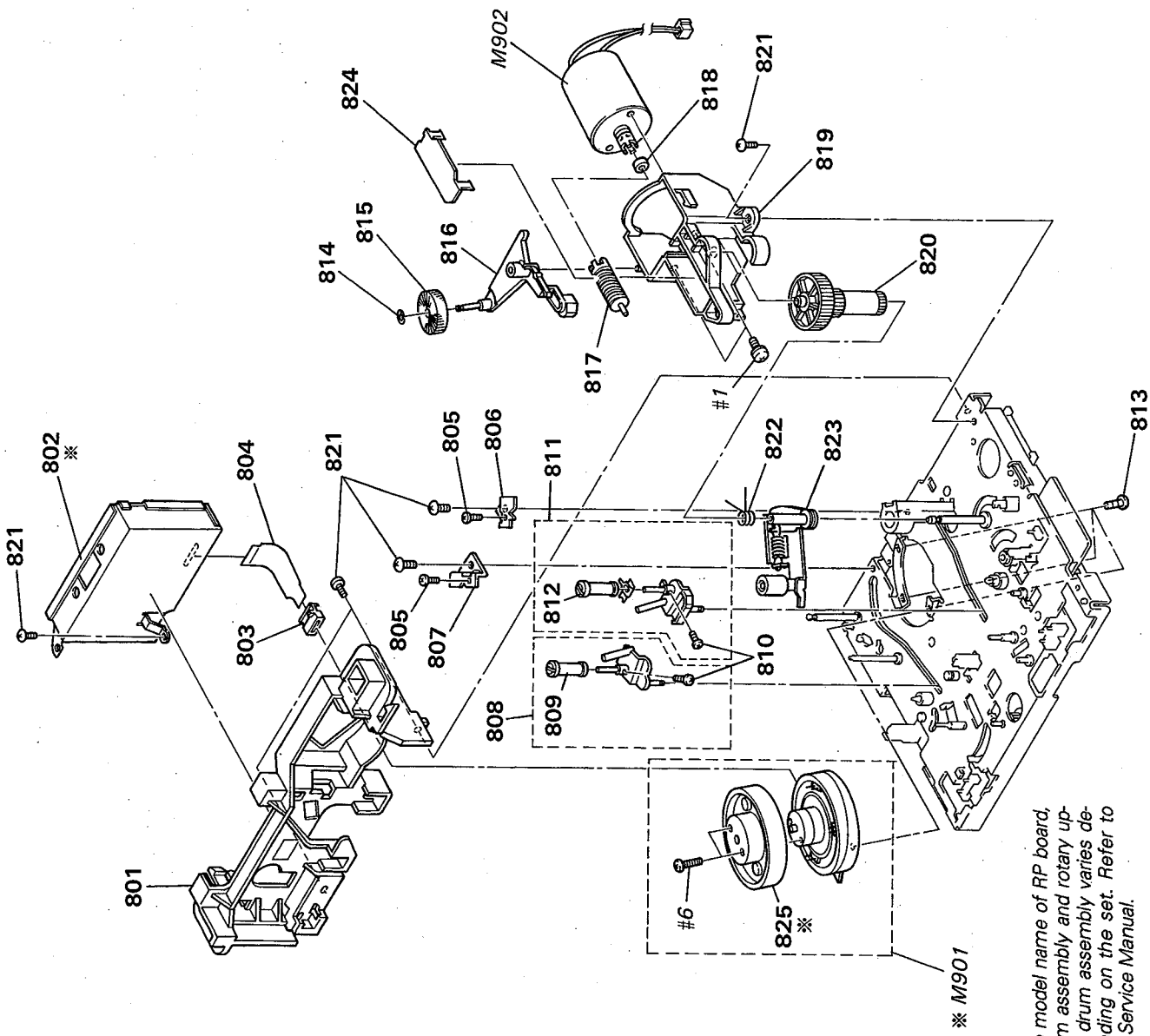
Ref.No.	Part No.	Description	Ref.No.	Part No.	Description	Remark
701	A-7091-941-A	FL BLOCK ASSY	709	3-954-034-01	ARM (S), DRIVING	
702	3-954-028-01	GEAR, FL WORM	710	3-954-033-01	ARM (T), DRIVING	
703	3-738-212-11	RETAINER, THRUST, REEL TABLE	*711	3-954-041-01	ARM, DOOR SWITCHING	
*704	3-954-029-01	SHAFT, FL WORM GEAR	712	3-954-043-01	SPRING, TENSION	
705	3-954-020-01	GEAR, DRIVING	*713	3-954-040-01	ARM, CASSETTE IN SWITCH	
706	3-954-019-01	WHEEL, FL WORM	714	3-954-044-01	SPRING, TENSION	
*707	3-954-032-01	PLATE (S), SIDE	715	3-732-817-01	SCREW (2X4.5), TAPPING	
708	3-954-042-01	SPRING, PRESS				

6-2. MD CHASSIS ASSEMBLY (1)



Ref.No.	Part No.	Description	Ref.No.	Part No.	Description	Remark
751	X-3943-111-1	BRAKE (T) ASSY, SOFT	768	3-726-882-02	FLANGE, LOWER, TC2	
752	3-726-829-01	WASHER, STOPPER	769	3-726-885-01	SLEEVE, TC2	
753	3-954-321-01	BEARING, PENDULUM DRIVING	770	3-726-883-31	ROLLER, TC2	
754	3-954-059-01	GEAR, PENDULUM DRIVING	771	3-726-884-01	FLANGE, UPPER, TC2	
755	X-3942-951-1	GEAR ASSY, PENDULUM	772	3-954-282-01	ROLLER (M)	
756	X-3943-162-1	BASE ASSY, PENDULUM	773	X-3943-015-1	BASE ASSY, ROLLER	
*757	3-954-063-01	PLATE, RELEASE, REEL LOCK	774	3-954-284-01	SPRING, TENSION	
758	3-955-142-01	SPRING, TENSION	775	3-954-096-01	SCREW, TC7 HEIGHT ADJUSTMENT	
759	X-3942-955-1	TENSION REGULATOR ASSY	776	3-954-093-01	SPACER, TC7	
760	3-954-074-01	SPRING, TENSION	777	X-3942-958-1	ARM ASSY, TC7	
761	3-954-103-01	ARM, TENSION ADJUSTMENT	778	3-954-003-01	SPRING (TC7), TORSION	
762	X-3942-956-1	BAND ASSY, TENSION REGULATOR	779	X-3943-161-1	BRAKE (T) ASSY	
763	X-3942-954-1	TABLE (S) ASSY, REEL	780	3-953-978-01	SPRING, TENSION	
764	X-3942-953-1	TABLE (T) ASSY, REEL	781	3-732-817-01	SCREW (2X4.5), TAPPING	
765	3-954-085-01	SPRING, TENSION	782	3-738-212-11	RETAINER, THRUST, REEL TABLE	
766	3-954-071-01	ARM, BRAKE (S)	783	3-669-465-00	WASHER (1.5), STOPPER	
767	3-954-001-01	SPRING, COMPRESSION				

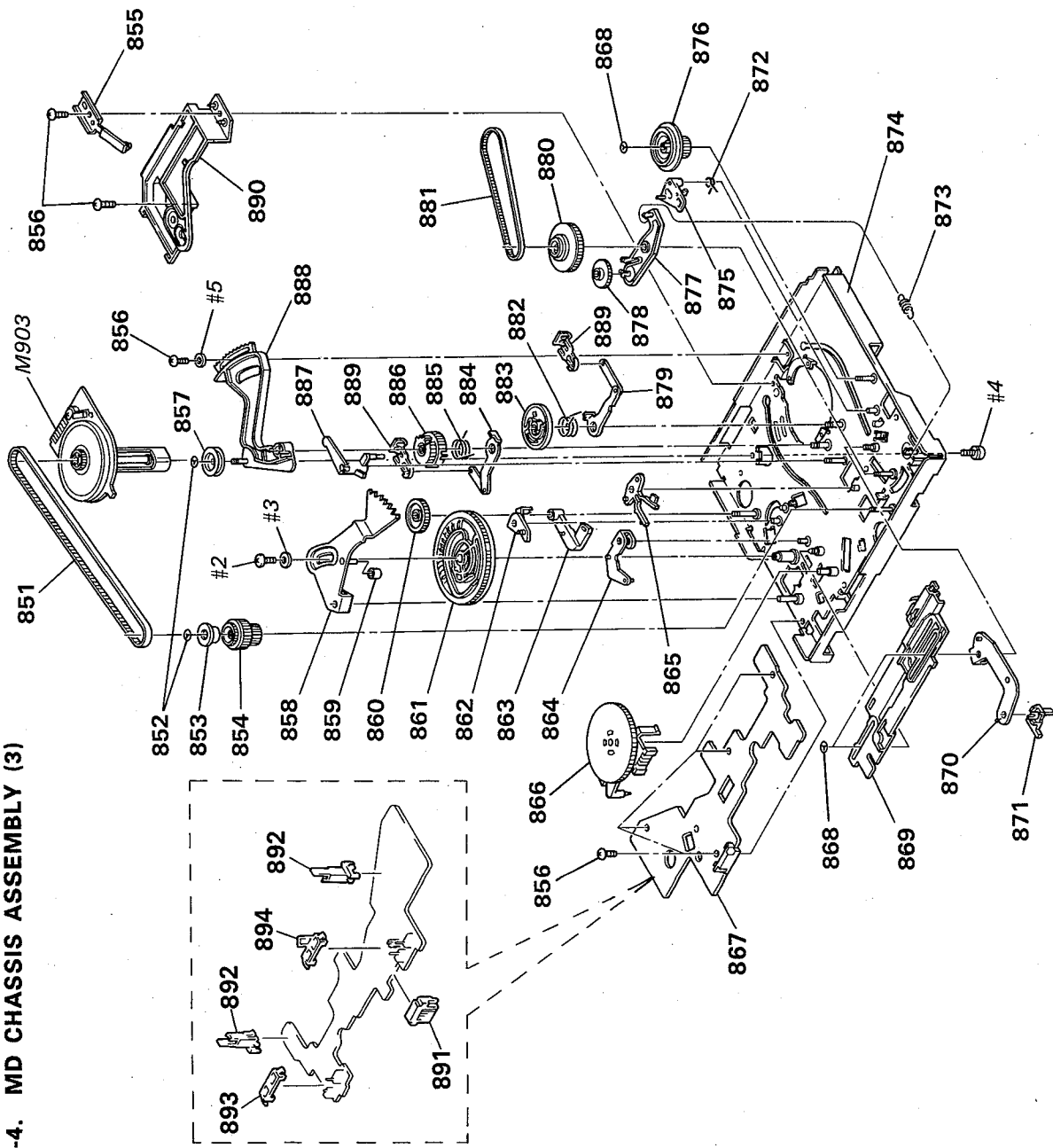
6-3. MD CHASSIS ASSEMBLY (2)



※ The model name of RP board, drum assembly and rotary upper drum assembly varies depending on the set. Refer to the Service Manual.

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description	Remark
* 801	3-955-623-01	FRAME, RP	815	X-3943-192-1	ROLLER ASSY, HC	
* 802	※	RP BOARD, COMPLETE	816	X-3942-947-1	ARM ASSY, HC	
803	1-691-471-11	CONNECTOR, TRANSLATION 11P	817	3-733-395-01	GEAR (CAM), WORM	
804	1-649-565-11	FP-696 FLEXIBLE BOARD	818	3-696-388-01	RUBBER, JOINT	
805	3-954-285-01	SCREW (M1.4X0.2)	819	3-954-024-01	HOLDER, MOTOR	
806	3-954-091-01	CATCHER (T)	820	3-954-023-01	WHEEL, CAM WORM	
807	3-954-090-01	CATCHER (S)	821	3-732-817-01	SCREW (2X4.5), TAPPING	
808	A-7040-338-A	COASTER (S) BLOCK ASSY	822	3-954-105-01	SPRING (PINCH DRIVING)	
809	X-3941-755-1	ROLLER ASSY (2), TC3	823	X-3942-945-1	ARM ASSY, PINCH	
810	3-947-504-01	SCREW (M1.2X2)	824	3-958-047-02	MOTOR HOLDER COVER	
811	A-7040-339-A	COASTER (T) BLOCK ASSY	825	※	DRUM, UPPER, ROTARY	
812	X-3941-756-1	ROLLER ASSY (2), TG6	M901	※	DRUM ASSY	
813	3-686-493-01	SCREW (MX5), P1	M902	X-3942-946-1	MOTOR ASSY, CAM	
814	3-321-393-01	WASHER, STOPPER				

6-4. MD CHASSIS ASSEMBLY (3)



Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remark
851	3-953-986-01	BELT, TIMING	* 874	X-3942-952-1	CHASSIS ASSY, MECHANICAL	
852	3-726-829-01	WASHER, STOPPER	875	3-954-100-01	ARM, TENSION REGULATOR SUB	
853	3-954-102-02	FLANGE, REEL RELAY	876	3-953-983-01	GEAR, FL PULLEY	
854	3-954-061-01	GEAR, REEL RELAY	877	3-953-979-01	ARM, FL SELECTION	
855	X-3942-960-1	GROUND ASSY, SHAFT	878	3-953-980-01	GEAR, FL SELECTION	
856	3-732-817-01	SCREW (2X4.5), TAPPING	879	X-3942-949-1	ARM (S) ASSY, LOADING	
857	X-3943-016-1	PULLEY ASSY, BELT	880	3-953-981-01	GEAR (DRIVING), FL PULLEY	
* 858	3-954-014-01	LEVER, LOADING DRIVING	881	3-954-079-01	BELT (FL), TIMING	
859	3-954-323-01	ROLLER, LOADING	882	3-953-998-01	SPRING (S), TORSION	
860	3-954-015-01	GEAR, CAM RELAY	883	3-953-991-01	GEAR (S), LOADING	
861	3-954-050-01	CAM, MAIN	884	X-3942-948-1	ARM (T) ASSY, LOADING	
* 862	3-954-009-01	LEVER, PINCH DRIVING	885	3-954-000-01	SPRING (T), TORSION	
863	3-954-016-01	LEVER, TG7 DRIVING	886	3-953-992-01	GEAR (T), LOADING	
* 864	3-954-007-01	LEVER, SLIDE PLATE DRIVING	887	3-954-072-01	LEVER, BRAKE (S) DRIVING	
865	3-953-973-01	ARM, PENDULUM COMPUSSION	888	X-3942-962-1	BASE ASSY, PULLEY	
866	1-692-498-11	SWITCH, ROTARY	889	3-956-649-01	SPRING, LEAF, COASTER	
* 867	1-648-300-11	MD-59 BOARD	* 890	3-954-049-01	RETAINER, WORM WHEEL	
868	3-669-465-00	WASHER (1.5), STOPPER	891	1-750-620-11	CONNECTOR (MM8 MD)	
869	3-953-972-01	PLATE, SLIDE	892	3-953-985-01	HOLDER, ST SENSOR	
* 870	3-953-974-01	ARM, S TAKE-UP	893	3-954-638-01	HOLDER (S), PUSH SWITCH	
871	3-953-975-01	CLAW, S TAKE-UP	894	3-954-639-01	HOLDER (T), PUSH SWITCH	
872	3-956-366-01	SPRING, TORSION	M903	8-835-499-01	MOTOR, DC SCE-0501A	
873	3-953-982-01	SPRING, TENSION				

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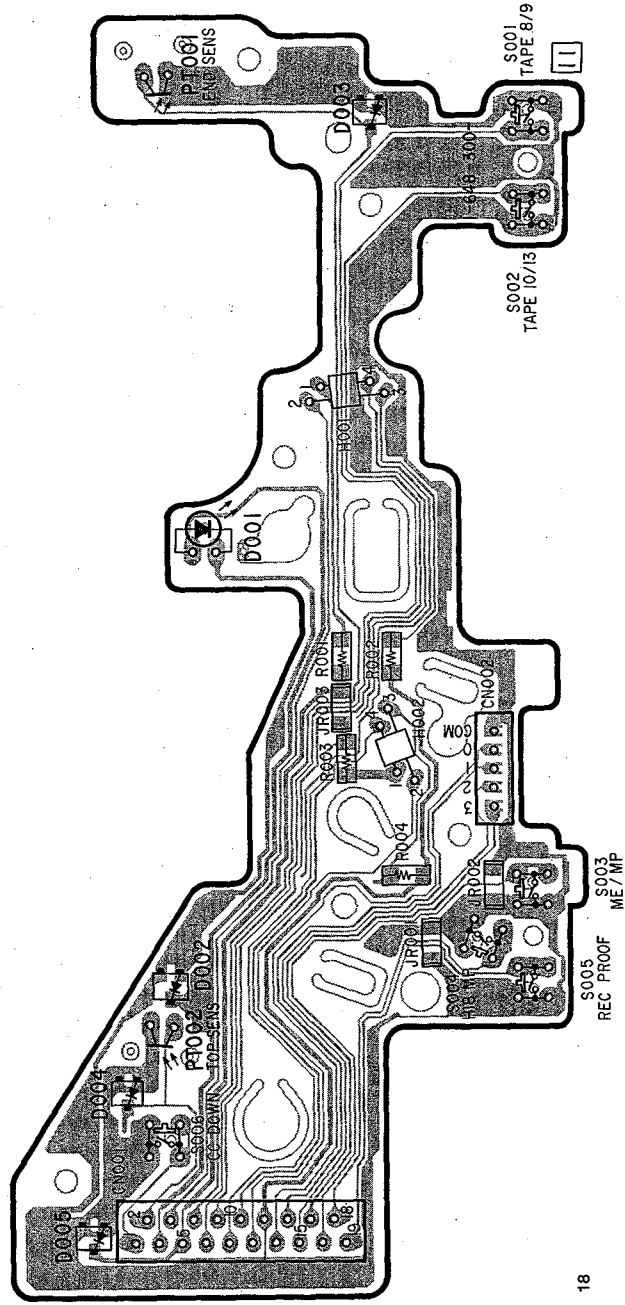
81



TO
SERVO/SYSTEM
CONTROL
BLOCK

PRINTED WIRING BOARD

MD-59 BOARD



18

8 mm Video MECHANICAL ADJUSTMENT MANUAL V

MD-59

SECTION 8 ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.

● RESISTORS

All resistors are in ohms.

METAL: Metal-film resistor.

METAL OXIDE: Metal oxide-film resistor.

F: nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS

In each case, u : μ , for example:

uA... : μ A..., uPA... : μ PA...,

uPB... : μ PB..., uPC... : μ PC..., uPD... : μ PD...

● CAPACITORS

uF : μ F

● COILS

uH : μ H

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark
*	1-648-300-11	MD-59 BOARD *****	
	3-953-985-01	HOLDER, ST SENSOR	
	3-954-638-01	HOLDER (S), PUSH SWITCH	
	3-954-639-01	HOLDER (T), PUSH SWITCH	
	< CONNECTOR >		
CN001	1-569-341-11	CONNECTOR, BOARD TO BOARD 19P	
*CN002	1-750-620-11	CONNECTOR (MM8 MD)	
	< DIODE >		
D001	8-719-988-42	DIODE GL453S	
D002	8-719-106-79	DIODE RD13M-B1	
D003	8-719-106-23	DIODE RD7.5M-B2	
D004	8-719-106-23	DIODE RD7.5M-B2	
D005	8-719-106-23	DIODE RD7.5M-B2	
	< HOLE ELEMENT >		
H001	1-808-118-11	ELEMENT, HALL HW-300A	
H002	1-808-118-11	ELEMENT, HALL HW/300A	
	< JUMPER RESISTOR >		
JR001	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR002	1-216-296-00	METAL CHIP 0 5% 1/8W	
JR003	1-216-296-00	METAL CHIP 0 5% 1/8W	
	< TRANSFORMER >		
PT001	8-729-907-25	TRANSISTOR PT4850F	
PT002	8-729-907-25	TRANSISTOR PT4850F	
	< RESISTOR >		
R001	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R002	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R003	1-216-190-00	METAL GLAZE 470 5% 1/8W	
R004	1-216-190-00	METAL GLAZE 470 5% 1/8W	
	< SWITCH >		
S001	1-692-497-11	SWICH, PUSH (TAPE 8/9)	
S002	1-692-497-11	SWICH, PUSH (TAPE 10/13)	
	< MISCELLANEOUS >		

	MISCELLANEOUS		

803	1-691-471-11	CONNECTOR, TRANSLATION 11P	
804	1-649-565-11	FP-696 FLEXIBLE BOARD	
825	*	DRUM ASSY	
866	1-692-498-11	SWITCH, ROTARY	
891	1-750-620-11	CONNECTOR (MM8 MD)	
	< DRUM ASSY >		
M001	*	DRUM ASSY	
M002	X-3942-946-1	MOTOR ASSY, CAM	
M003	8-835-499-01	MOTOR, DC SCE-0501A	
	< HARDWARE LIST >		

	HARDWARE LIST		

#1	7-682-645-01	SCREW +PS 3X4	
#2	7-621-772-08	SCREW +B 2X3	
#3	7-688-003-01	W 3, SMALL	
#4	7-628-253-15	SCREW +PS 2X5	
#5	7-688-001-01	W 2, MIDDLE	
#6	7-627-853-57	PRECISION SCREW +P 2X5 TYPE3	

8 mm Video MECHANICAL ADJUSTMENT MANUAL V

F MECHANISM

CORRECTION-1

Correct your MECHANICAL ADJUSTMENT MANUAL V as shown below.

Subject:

1. Change of Mounting and Removal of FL Worm Wheel
2. Change of Disassembly Figure, Parts

4-26. FL WORM WHEEL (Fig. 33)(Page 33)

1. Removal

- 1) Disengage tabs **A** at four places and remove the gear cover **1**.
- 2) Remove the FL worm wheel **2**.

2. Mounting

- 1) Mount the FL worm wheel **2**.
- 2) Meeting the hole **B** in drive gear with the hole in side plate, mount the FL worm wheel **2** while meeting the hole **C** in FL worm wheel with the hole in side plate.
- 3) Mount the gear cover **1**.

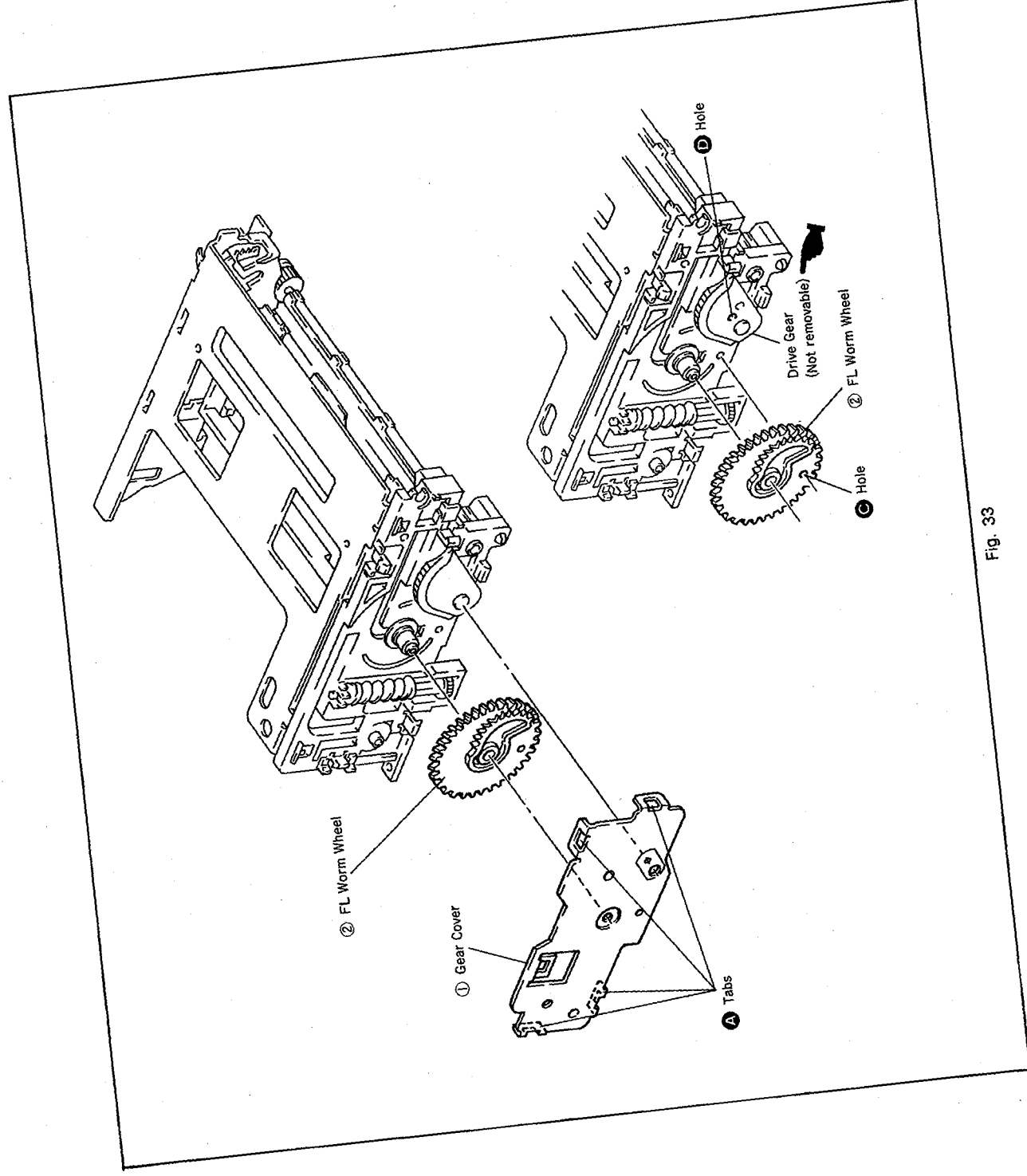
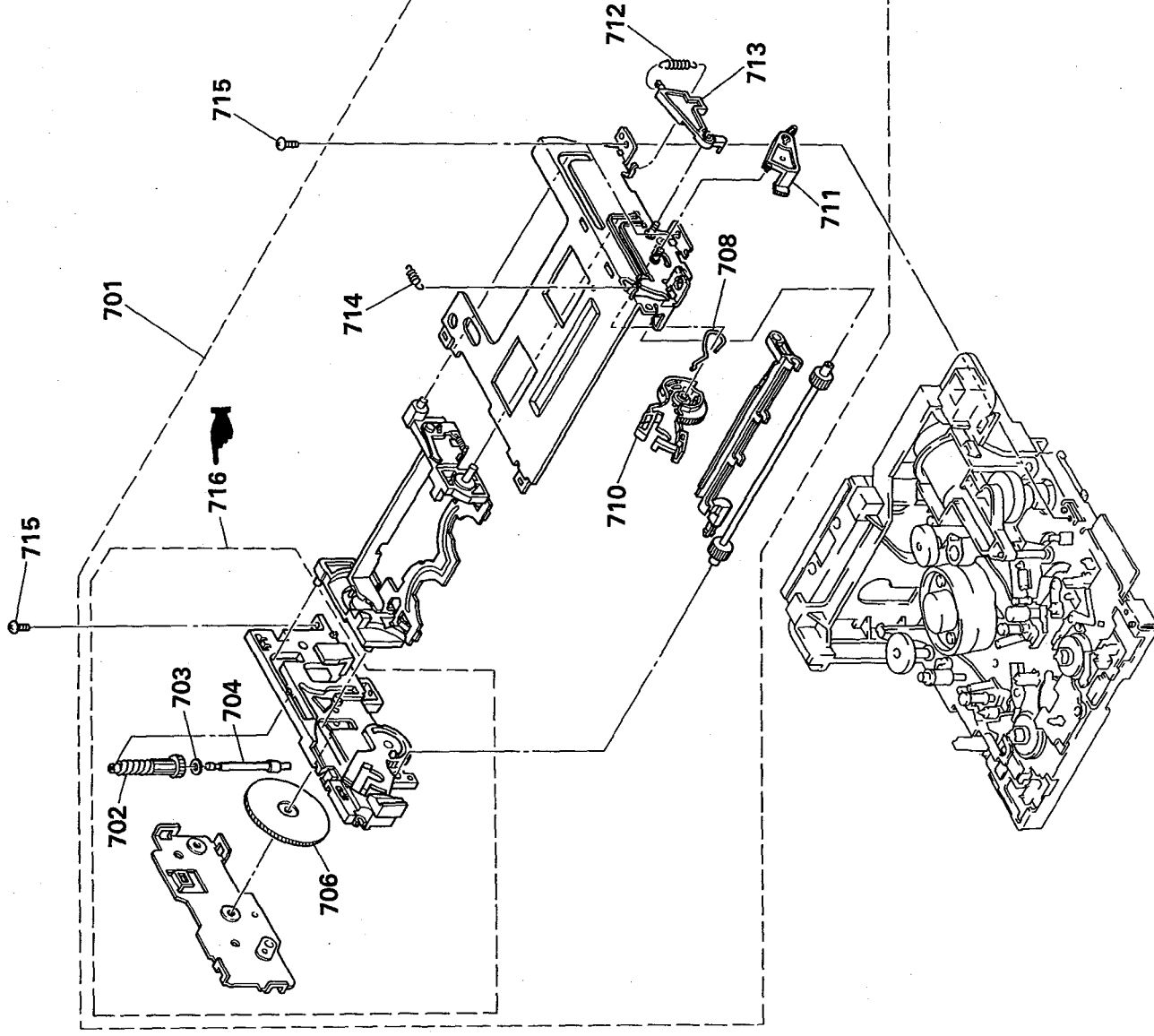


Fig. 33

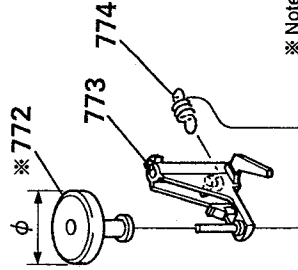
 : Indicates Corrected portion

6-1. FRONT LOADING ASSEMBLY (Page 39)



Ref. No.	Part No.	Description	Ref. No.	Part No.	Description	Remark
701	A-7091-941-A	FL BLOCK ASSY	710	3-954-033-01	ARM (T), DRIVING	
702	3-954-028-01	GEAR, FL WORM	* 711	3-954-041-01	ARM, DOOR SWITCHING	
703	3-738-212-11	RETAINER, THRUST, REEL TABLE	712	3-954-043-01	SPRING, TENSION	
* 704	3-954-029-01	SHAFT, FL WORM GEAR	* 713	3-954-040-01	ARM, CASSETE IN SWITCH	
706	3-954-019-01	WHEEL, FL WORM	714	3-954-044-01	SPRING, TENSION	
708	3-954-042-01	SPRING, PRESS	715	3-732-817-01	SCREW (2X4.5), TAPPING	
			716	A-7091-942-A	PLATE (S), SIDE ASSY	

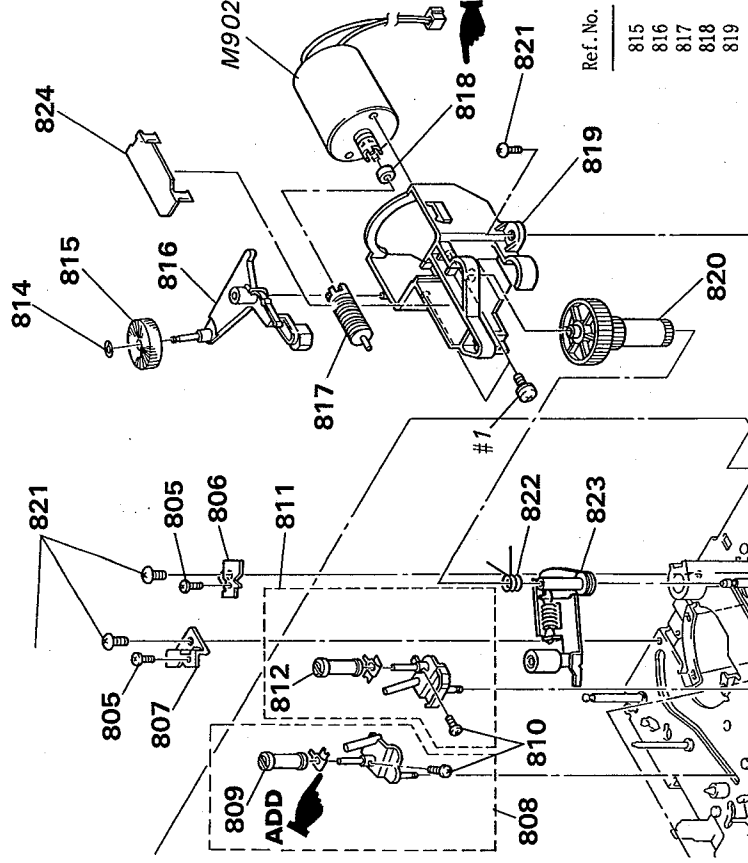
6-2. MD CHASSIS ASSEMBLY (1) (Page 40)



Ref.No.	Part No.	Description	Remark
768	3-726-882-02	FLANGE, LOWER, TC2	
769	3-726-885-01	SLEEVE, TC2	
770	3-726-883-31	ROLLER, TC2	
771	3-726-884-01	FLANGE, UPPER, TC2	
772	3-954-282-01	ROLLER (M NTSC), IMPEDANCE	ADD
772	3-962-051-01	ROLLER (M PAL), IMPEDANCE	ADD
773	X-3943-015-1	BASE ASSY, ROLLER	
774	3-954-284-01	SCREW, TENSION	
775	3-954-096-01	SCREW, T _{G7} HEIGHT ADJUSTMENT	
776	3-954-093-01	SPACER, TC7	
777	X-3942-958-1	ARM ASSY, TC7	
778	3-954-003-01	SPRING (TC7), TORSION	
779	X-3943-161-1	BRAKE (T) ASSY	
780	3-953-978-01	SPRING, TENSION	
781	3-732-817-01	SCREW (2X4.5), TAPPING	
782	3-738-212-11	RETAINER, THRUST, REEL TABLE	
783	3-669-465-00	WASHER (1.5), STOPPER	

※ Note that there are two kinds of impedance roller (M) weights whose diameters are as follows.
NTSC model : ϕ 19
PAL model : ϕ 10

6-3. MD CHASSIS ASSEMBLY (2) (Page 41)



Ref.No.	Part No.	Description	Remark
815	X-3943-192-1	ROLLER ASSY, HC	
816	X-3942-947-1	ARM ASSY, HC	
817	3-733-395-01	GEAR (CAM), WORM	
818	3-962-295-01	RUBBER, JOINT	
819	3-954-024-01	HOLDER, MOTOR	
820	3-954-023-01	WHEEL, CAM WORM	
821	3-732-817-01	SCREW (2X4.5), TAPPING	
822	3-954-105-01	SPRING (PINCH DRIVING)	
823	X-3942-945-1	ARM ASSY, PINCH	
824	3-958-047-02	MOTOR HOLDER COVER	
825	※	DRUM, UPPER, ROTARY	
M901	※	DRUM ASSY	
M902	X-3942-946-1	MOTOR ASSY, CAM	

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Consumer A&V Products Company
Home A&V Products Div.

9-973-445-92

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8mm Video MECHANICAL ADJUSTMENT MANUAL V

F MECHANISM

video 8

CORRECTION-2

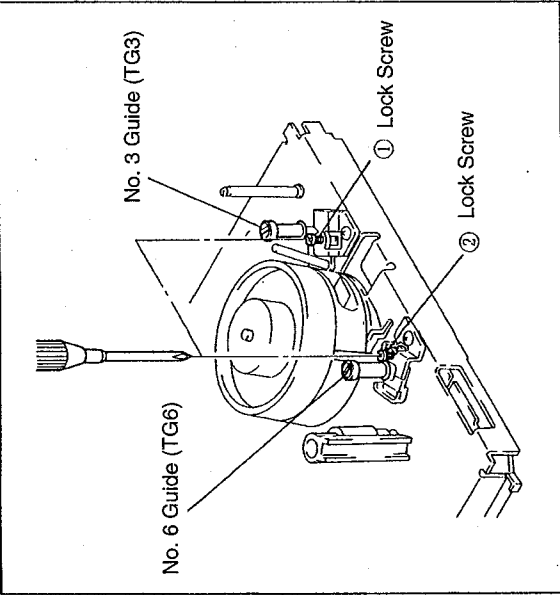
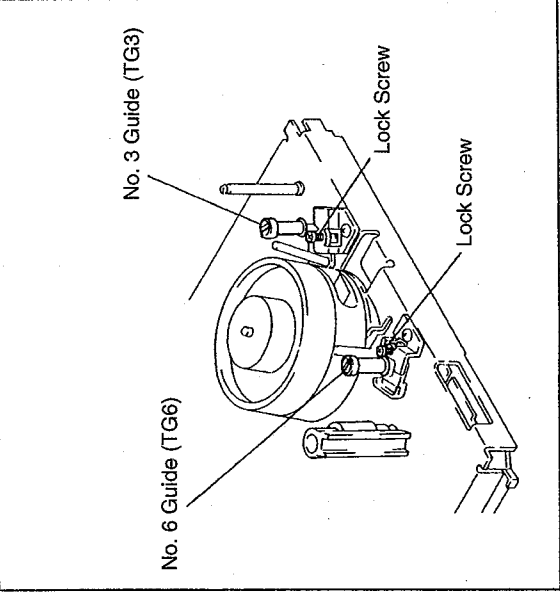
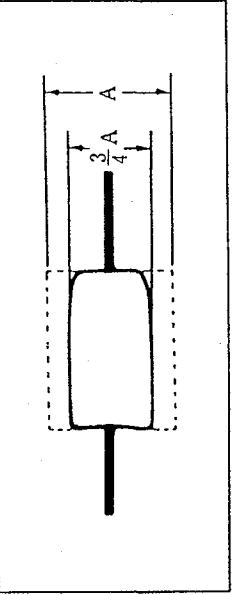
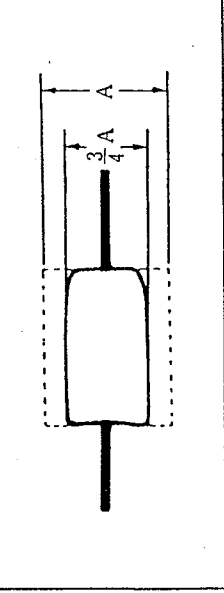
Please correct your 8mm Video MECHANICAL ADJUSTMENT MANUAL V.

Subject : 5-2. TRACKING ADJUSTMENT

(97-005)

8mm Video MECHANICAL ADJUSTMENT MANUAL V

Page 36

Incorrect	Correct
5-2. TRACKING ADJUSTMENT (Fig. 37, 38) 1) Play back the tracking alignment tape. 2) Loosen the No. 3 guide (TG3) lock screw ① and turn the No. 3 guide to flatten the waveform at the inlet. 3) Tighten the No. 3 guide (TG3) lock screw ① to lock the No. 3 guide. 4) Loosen the No. 6 guide (TG6) lock screw ② and turn the No. 6 guide to flatten the waveform at the outlet. 5) Tighten the No. 6 guide (TG6) lock screw ② to lock the No. 6 guide. When this is done, make sure that the waveform does not change at the outlet. Note : Be careful not to loosen the lock screw too much because the guide is easily moved.	5-2. TRACKING ADJUSTMENT (Fig. 37, 38) 1) Play back the tracking alignment tape. 2) Turn the No. 3 guide to flatten the waveform at the inlet. 3) Turn the No. 6 guide to flatten the waveform at the outlet. Note : Be careful not to touch the lock screw.
 Fig. 37	 Fig. 37
 Fig. 38	 Fig. 38